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MOTION PICTURE EQUIPMENT

STAT

USSR

STANKOIMPORT

MOSCOW

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MOTION PICTURE EQUIPMENT

VSESOJUZNOJE EXPORTNO-IMPORTNOJE OBJEDINENIJE

STANKOIMPORT

USSR MOSCOW

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Motion picture equipment and accessories manufactured in the U.S.S.R. embody the latest achievements in this field, and are perfect in design and workmanship.

Superior materials, modern design and skilful workmanship ensure outstanding performance and durability of the motion picture equipment and accessories.

High operating merits are combined with a finely-styled outer appearance, excellent finish, light weight and convenience in handling.

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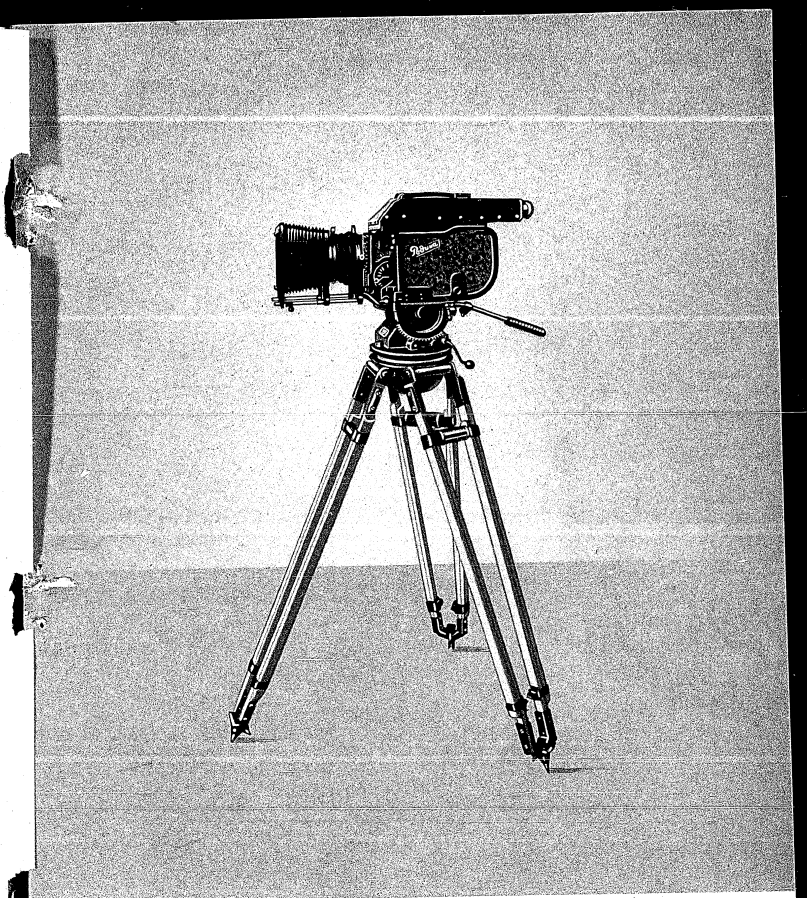

MOTION PICTURE CAMERAS

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"RODINA" (KCX) 35-mm MOTION PICTURE CAMERA FOR NEWSREEL AND EXPEDITIONARY FILMING

The "Rodina" Motion Picture Camera (Fig. 1) is designed to perform newsreel and expeditionary filming with black-and-white as well as colour 35-mm film.

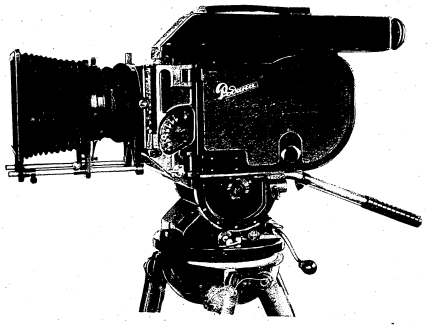

Fig. 1. Motion Picture Camera "Rodina"

New design of the intermittent film mechanism ensures high-precision registration of separate picture frames within the film channel, and allows use of the camera for special and trick filming.

Special design of the friction clutch permits use of magazines of 120-metres and 300-metres film capacity (Fig. 2). Quick change lens mounts provide ease and facility in the interchange of lenses.

Picture composition and visual control during the filming process are achieved by means of a magnifying view-finder.

Control of filming speed is provided by a tachometer with dial divisions in picture-frames per second.

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SPECIFICATIONS

Film size	35 mm
Path of film travel within camera	in three planes
Film gate dimensions	16 × 22 mm
Shutter aperture angle	0° to 160°
Magazines	single compartment type of 120 and 300-meter capacity
Film length and picture-frame counter	drum type with zero setting

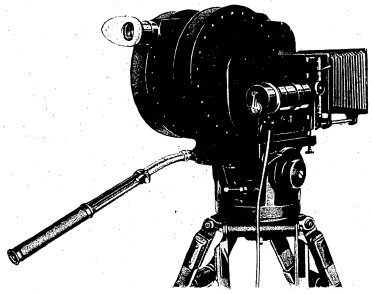

Fig. 2. Motion Picture Camera "Rodina" with 300-metre capacity magazines

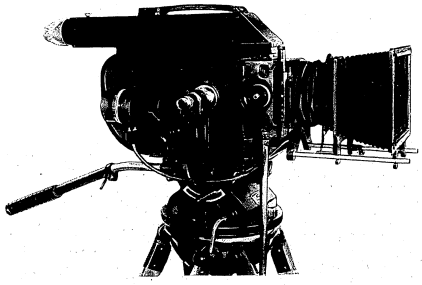

Fig. 3. Motion Picture Camera "Rodina", right-side view

Camera-to-tripod attachment	by means of 3/8″ screw
Interlocking devices to effect stoppage	in case of film breakage, termination of film roll, or slackening of film tension
View-finder	parallaxless magnifier of 5.5-time magnifying power
Set of coated photographic lenses in bayonet mounts	28, 35, 50, 75 and 100-mm focal length

Minimum focal length of photographic lens	28 mm
Focusing of photographic lens	by magnified image on view-finder screen; by focusing scales
Tachometer readings	8, 16, 24, 32 and 48 picture frames per second
Normal operation temperature conditions	from + 40° to — 25° C
Power drive	12 V, 60 W D. C. electric motor
Camera run	reversible
Exposure speed	3 to 48 picture frames per sec
Noise level	50 + 2 db
Overall dimensions of camera in operating position with electric motor (length × height × width)	650 × 280 × 260 mm
Weight of camera (less tripod and film)	14 kg with hand drive 16.2 kg with motor drive
Weight of camera set in carrying cases (less storage battery)	35 kg
Weight of storage battery	11.5 kg

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"MOSKVA" (KC-32) 35-mm MOTION PICTURE CAMERA FOR SYNCHRONOUS FILMING

The "Moskva" Camera (Fig. 4) is designed to perform synchronous filming of images and simultaneous sound-track record-

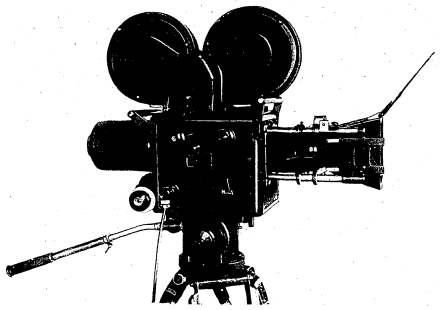

Fig. 4. Motion Picture Camera "Moskva"

ing by means of a recorder on 35-mm film and is adapted for studio and outdoor work.

Specially silenced to eliminate mechanical noises the camera permits simultaneous sound-recording, provided the microphone is stationed not less than 1 metre from the camera front.

High-precision performance of the intermittent film mechanism allows use of the camera for special (trick) filming.

Focusing of the photographic lens is achieved by ground glass, film, or focusing scales; simultaneous compensation of parallax and focusing of the view-finder lens are automatic.

A left-side view of the camera is given in Fig. 5, and a diagram of film threading in Fig. 6.

The camera is provided with an interlocking device to shut off the motor when normal operation of the camera is interfered with.

On-and-off switching of the camera is achieved by means of a switch mounted on the power-supply line.

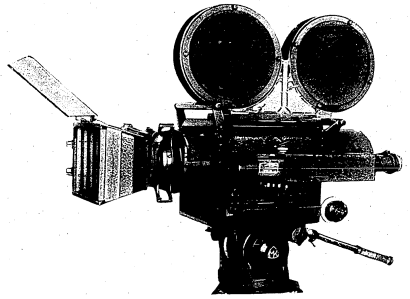

Fig. 5. Motion Picture Camera "Moskva", left-side view

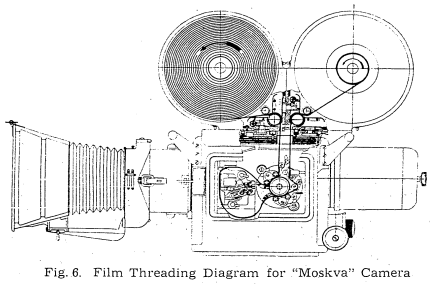

Fig. 6. Film Threading Diagram for "Moskva" Camera

Camera power supply is fed through a 220 V autotransformer from 220 or 380-volt 50-cycle A. C. mains. Voltage variations in the mains are compensated by a regulator switch in the autotransformer.

Lighter weight and smaller overall dimensions add greatly to the camera's operating merits over other known synchronous motion picture cameras.

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Handy location of all operation and control elements on the back and right side-walls of the camera, and the design of the easily removable parts (intermittent film mechanism, sprocket assembly, etc.) as well as the interchangeability of the detachable parts in all cameras of this type ensure operation efficiency and convenience in inspection and cleaning.

SPECIFICATIONS

Film size	35 mm
Path of film within camera	in one plane
Exposure speed	24 picture frames per sec
Noise level	not over 29 db
Accuracy of picture frame registration in the film channel	0.008 mm
Film gate dimensions	16 × 22 mm
Shutter aperture angle	0° to 170°
View-finder	detachable, with automatic parallax compensation and lens focusing
Magazines	single compartment type, in pairs of 300-metre capacity each
Set of coated lenses	28, 35, 50, 75, 100 mm focal length
Minimum focal length of photographic lens	24 mm
Power drive	three-phase 220 V, 150 W, 1,500 r.p.m. synchronous motor
Speed of reduction gear shaft	1,440 r.p.m.
Camera run	reversible
Interlocking devices	to effect stoppage in case of film breakage, slackening of film tension or idling of intermittent film mechanism
Focusing of photographic lens	by ground glass, by film, by focusing scales
Camera to tripod attachment	by means of 3/8" screw
Overall dimensions of camera in working position	1,120×585×470 mm
Distance between optical axis and base of camera housing	169.7 mm
Weight of camera (less tripod and film)	62 kg
Weight of camera set in carrying cases	130 kg

The motion picture camera is supplied with the following accessories:

Focusing magnifier; light-protective device with filter-holder; 6 magazines of 300-metre capacity; belt tensioning and switching mechanism; carrying cases for magazines and motor; switch.

Photographic lenses (PO coated type) with 1 :2 relative aperture and focal lengths of 28, 35, 50, 75 and 100 mm (5 lenses).

IM-35 three-phase, 220 V, 150 W electric motor.

7C-II View-finder.
KAT-24-I auto-transformer in jacket.
Set of tools.
Description of camera and instructions for maintenance.
Carrying cases (Fig. 7).

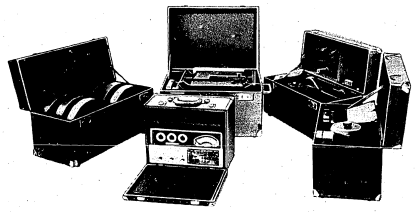

Fig. 7. Motion Picture Camera "Moskva", packed in carrying cases

The motion picture camera "Moskva" is additionally supplied with a IIICK-2 tripod on special order.

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КС-50 Б 35-mm MOTION PICTURE CAMERA FOR NEWSREEL FILMING

The КС-50 Б 35-mm Motion Picture Camera (Fig. 8) is designed for filming of newsreel and documentary films.

The camera has 3 interchangeable lenses mounted on a revolving turret, and a rotating view-finder; the focal lengths of the view-finder lenses are proportionate to their corresponding

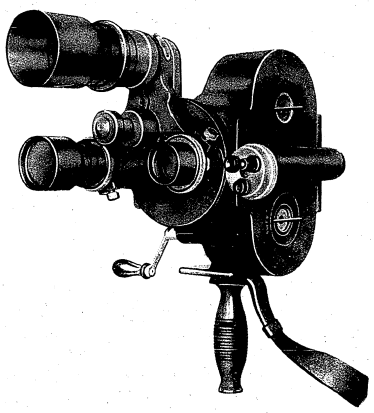

Fig. 8. КС-50 Б Motion Picture Camera

photographic lenses. Focusing of the lenses is achieved by means of a distance collar on each of the lens mounts.

A spring-drive mechanism enables to conduct continuous filming up to a 16.5-meter film run.

Filming can be performed with the camera being hand-held or with the camera set on a tripod.

The camera is equipped with a hand drive; one revolution of the hand crank corresponds to the exposure of eight picture frames.

The camera has a special carrying case for convenient transportation.

Accessories and necessary tools are provided with the camera.

SPECIFICATIONS

Number of photographic lenses	3
Lenses relative aperture	1 : 2
Focal length of lenses	35, 50 and 75 mm
Reel capacity	30—34 m
Operating speed	8, 12, 16, 24, 32 exp. per sec
Film length counter division	0.5 m
Shutter	of the constant 160° angular aperture allows the following exposures:
	at 8 frames per sec . . . $^1/_{18}$ sec
	„ 12 „ „ „ . . . $^1/_{27}$ sec
	„ 16 „ „ „ . . . $^1/_{36}$ sec
	„ 24 „ „ „ . . . $^1/_{54}$ sec
	„ 32 „ „ „ . . . $^1/_{72}$ sec
Distance range	for each lens is from 1 m to infinity.
Overall dimensions of camera:	285×250×450 mm
Weight of camera	12 kg

ШКС-2 CAMERA TRIPOD

The ШКС-2 Tripod (Fig. 9) is designed for motion picture cameras of various types for studio and outdoor filming.

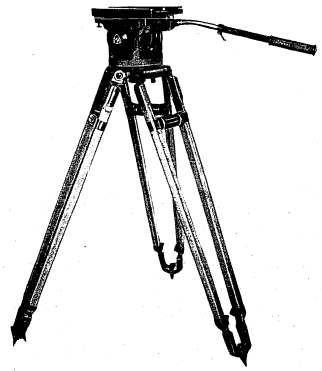

Fig. 9. ШКС-2 Tripod

The tripod is adapted for use on different soils and rough surfaces, in premises with smooth and hard floors, as well as on special vehicles and trucks.

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Besides free and variable inertia motion, the inertia-type head possesses two worm and gear drives for each.

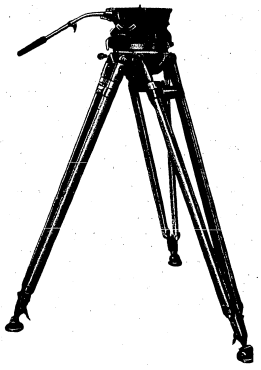


Fig. 12. IIIC-3 Tripod

A special brake regulates the movement and stoppage of the camera during inertia panoraming.

The tripod head design permits horizontal circular panoraming (360°) and vertical panoraming with an up-and-down range

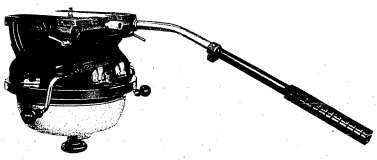
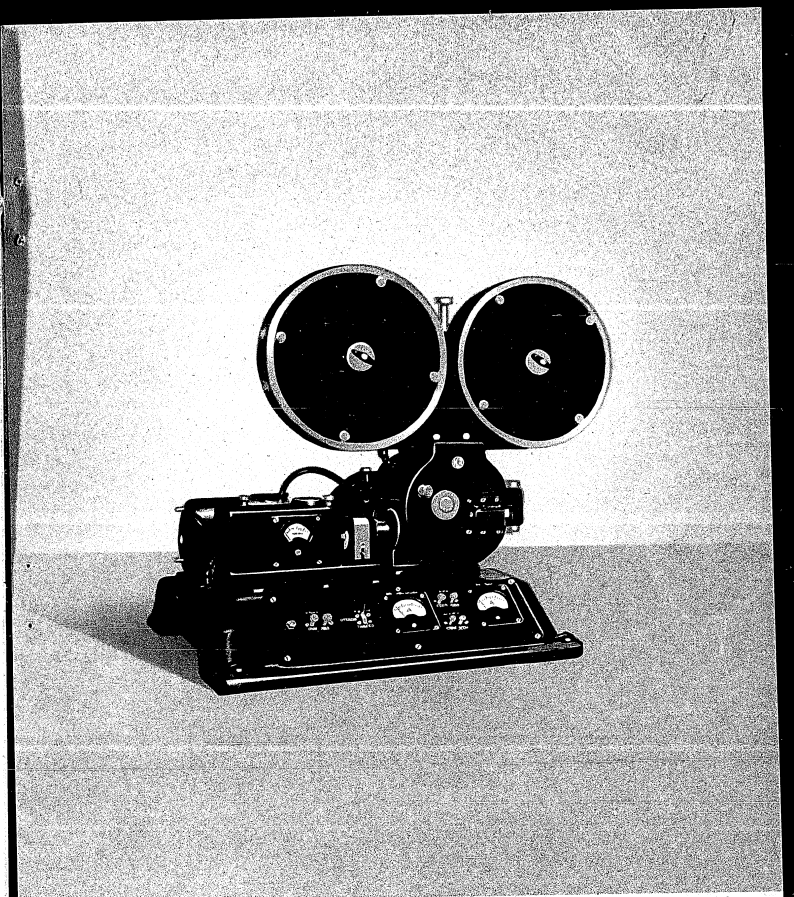


Fig. 13. IIIC-3 Tripod Head

of 40° each. The design ensures easy and quick adjustment of the tripod head to the legs.

The tripod is adapted to support cameras weighing up to 30 kg. Finelly styled, light-inweight, packed in compact jackets, the tripod is convenient for transportation and storage.

Weight of the tripod — 18 kg.



SOUND FILM RECORDING EQUIPMENT

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K3ПУ PORTABLE SOUND FILM RECORDER

The K3ПУ Portable Sound Film Recorder is designed to perform synchronous sound recording on 35-mm film by the photographic method in expeditionary conditions.

Several models of portable sound recorders are available at present for recording on normal or double-area sound tracks, and enable connection of the recorder to different supply lines under varying local conditions.

The table below includes brief characteristics of the models available and their sets.

The K3ПУ Sound Recorder contains:

33П Recording Device (Fig. 14) which is designed for recording on 35-mm film by means of the variable area method. Recording is of normal or push-pull noiseless sound track type of standard or double area.

High uniformity of film travelling speed is ensured by a rotary speed stabilizer.

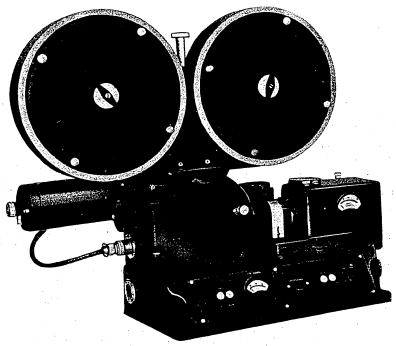

Fig. 14. 33П Recording Device

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The light modulation system of the recording device allows for recording with white and ultra-violet light.

High-efficiency recording is provided by the frequency range of the device.

The recording device is mounted and secured in a solid carrying case convenient for transportation.

Removal of the easily detachable case cover and installation of the motor and magazines are sufficient to bring the device into instant use.

Overall dimensions of recording device (height × length × width) 600 × 720 × 300 mm
Weight of recording device . . . . . 54 kg

1 У 50-А Preamplifier (Fig. 15), which mixes and preamplifies incoming signals from two microphones.

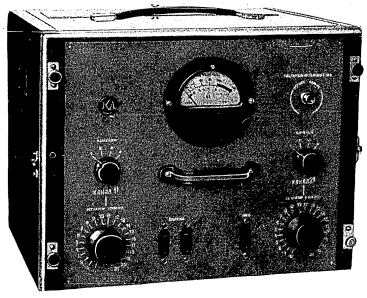

Fig. 15. 1 У 50-А Preamplifier

The amplifying range of the device permits use of microphones of the lowest response.

The provided correction range of the frequency characteristics in the preamplifier and the main amplifier covers recording requirements in the studio and outdoors.

The electromechanical properties of the volume indicator mounted in the preamplifier enable to maintain complete visual control of the volume of signals recorded.

The electrical characteristics of the transformers in the preamplifier ensure a remarkably low noise level of the amplifying channel, and do not, therefore, limit the dynamic range of the recording.

The preamplifier is mounted in a metal portable case and is readied for use by a simple connection of its cables. Removal of the easily detachable front cover gives access to the control board.

Overall dimensions of preamplifier (height × length × width) . . . . . 305 × 350 × 293 mm
Weight of preamplifier . . . . . 15 kg

12 У-3 Main Amplifier (Fig. 16), which achieves the subsequent amplifying of signals coming in from the preamplifier and makes provisions for the possibility of compression of the output volume.

The main amplifier is mounted in a metal cabinet containing frames for recorder and intermediate amplifiers. Clamps on the cabinet side walls are provided to secure the cabinet in a truck.

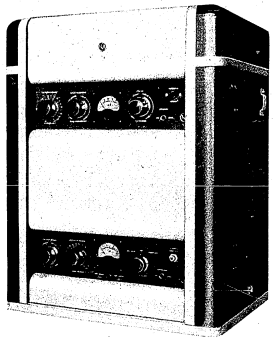

Fig. 16. 12 У-3 Main Amplifier

The cabinet front cover is easily removable to give free access to the tubes. The frame is mounted on loops, and special hinges afford free access to the amplifier parts.

Overall dimensions of the amplifier (height × length × width) . . . . . 712 × 535 × 365 mm
Weight of amplifier . . . . . 41 kg

Power-supply Device, which supplies motion picture camera and sound-recorder electric motors with three-phase current and feeds D. C., high and low voltage circuits of the preamplifier, the main amplifier and the exposure lamp of the sound recorder. Four types of power supply devices — КПСУ-1, КПСУ-2, КПСУ-3 and КПСУ-4 are available. Regardless of the type of Power-supply device, stabilized supply is ensured for D. C. circuits of high- and low voltage.

a) The КПСУ-2 Power-supply device (Fig. 17) is operated on high-capacity storage batteries and is used where no A. C. mains are available.

50-cycle frequency of the three-phase current is constantly maintained irrespective of battery discharge in the bounds of normal operating conditions. Battery capacity provides for 12 hour operation without reloading.

All parts of the equipment for converting and distributing the electric power supplied from the batteries are mounted in a dur-aluminum frame.

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To provide transportation convenience the frame is secured in a solid case of special design.

Inspection and adjustment of the rotary converters is facilitated by the sliding guides on which they are mounted.

Fig. 17. КПСУ-2 (КПСУ-4) Power-supply Device

The side walls of the case may be swung aside to allow free access to the switch panels.

Overall dimensions of the power-supply device (height × length × width) . . . . . 430 × 605 × 330 mm
Weight of device . . . . . 55 kg

b) The КПСУ-4 Power-supply device is intended for the same purposes as the КПСУ-2 device with the difference that the alternating current it converts is of 60-cycle frequency.

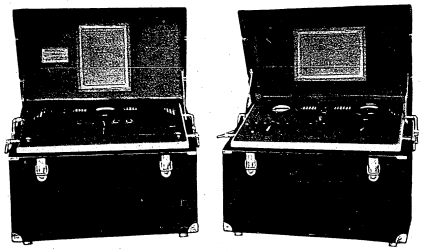

Fig. 18. КПСУ-1 (КПСУ-3) Power-supply Device

c) The КПСУ-1 Power-supply device (Fig. 18) is intended for use when the КЗПУ sound recorder is supplied from 220 or 380 V three-phase 50-cycle mains.

To make it portable the КПСУ-1 power-supply device is divided into two functionally related parts. The first contains the general stabilizer and exposure lamp rectifier, the second — the power-supply rectifier of the amplifying channel.

Both parts are of similar construction, styled of duraluminum frames, mounted in solid cases provided with hinged covers.

Overall dimensions of each of the parts (height × length × width) . . 430 × 615 × 300 mm
Weight of device . . . . . 94 kg

d) The КПСУ-3 Power-supply device is intended for the same purposes as device КПСУ-1, with the difference that it operates on 60-cycle frequency mains.

1 У-101 Public Address Amplifier (Fig. 19), which intensifies orders relayed from the camera-crew during mass outdoor filming.

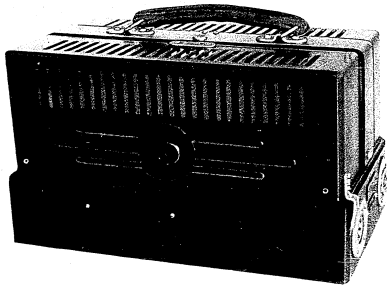

Fig. 19. 1 У-101 Public Address Amplifier

The public address amplifier is styled as a light metal chassis covered with a casing. The hinged rear cover of the casing provides free access to the tubes.

Overall dimensions of the amplifier (height × length × width) . . . . . 245 × 312 × 190 mm
Weight of amplifier . . . . . 6 kg

25 А-1 Loudspeaker (Fig. 20), which reproduces instructions from the camera-crew during mass outdoor filming.

The loudspeaker consists of a head provided with a permanent magnet and mounted in a solid wooden case with a grip for transportation. A metal grid protects the head against mechanical damages and a hood of light fabric keeps out the dust.

Overall dimensions of loudspeaker (height × length × width) . . . . . 430 × 432 × 201 mm
Weight of loudspeaker . . . . . 12 kg

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TABLE

of KZPU Sound Recorder Sets

Model		Main units of set							
Symbol	Characteristics of the model	Recording device	Preamplifier	Main amplifier	Power-supply device	Public address amplifier	Loud-speaker	Micro-phone	Communication phones
KZPU-2	Basic type. Designed for supply from storage batteries.	ZZP-1/B	1 U 50-A	12 U-3	KPSU-2	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-3	Designed for supply from A. C. mains	ZZP-1/B	1 U 50-A	12 U-3	KPSU-1	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-4	Recording device adapted to record sound tracks of double area. Power supply from storage batteries.	ZZP-2	1 U 50-A	12 U-3	KPSU-2	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-5	Recording device for double area sound tracks. Designed for supply from A. C. mains.	ZZP-2	1 U 50-A	12 U-3	KPSU-1	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-6	Special set of optics and spare parts allows change-over to double area sound tracks in studio. Power supply from storage batteries.	ZZP-1/B	1 U 50-A	12 U-3	KPSU-2	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-7	Special set of optics and spare parts allows change-over to double area sound tracks in studio. Power supply from A. C. mains.	ZZP-1/B	1 U 50-A	12 U-3	KPSU-1	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-8	Similar to KZPU-6 with power supply frequency being 60 cycles	ZZP-1/B	1 U 50-A	12 U-3	KPSU-1	1 U-101	25 A-1	8 A-5	UPAF-42 M
KZPU-9	Similar to KZPU-7 with power supply from A. C. mains being 60 cycles	ZZP-1/B	1 U 50-A	12 U-3	KPSU-3	1 U-101	25 A-1	8 A-5	UPAF-42 M

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8 A-5 Dynamic Microphone, with an 11-A-8 type tripod, is used with the public address amplifier when instructions are being relayed. The solid design of the 8 A-5 dynamic microphone ensures reliable performance in expeditionary conditions.

Two УНАФ-42М Communication Telephones, which serve for communications between the sound-recording operator and the sound-recording room.

Any requirements liable to arise with the use of the КЗПУ Sound Recorder in expeditions have been taken into consideration in the design of the units.

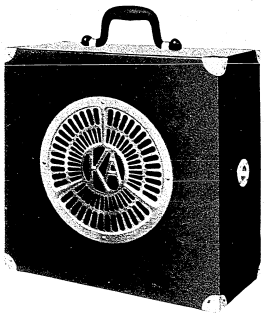

Fig. 20. 25A-1 Loudspeaker

Switching and inter-connecting of separate parts of the recorder are achieved by means of connector cables with connection plugs. Cable extension is provided to allow the preamplifier, the motion picture camera and parts of the public address channel to be moved to distances up to 100 metres from the remaining equipment (usually installed on a truck).

For railroad transportation and storage of spare parts and service tools the amplifying section of the recorder is provided with three sturdy cases.

Weight of set, complete with carrying cases — approx. 1,050 kg.

КЗУС STATIONARY SOUND FILM RECORDER

The КЗУС Stationary Sound Film Recorder performs synchronous sound recording on 35-mm film by the photographic method in studios.

In order to meet requirements of recording sound tracks of normal, as well as double area, and connection of the device to different supply lines under varying local studio conditions, several models of stationary sound film recorders are available.

The table below gives brief characteristics of available sound recorder models and their sets.

The КЗУС Sound Recorder includes the following units:

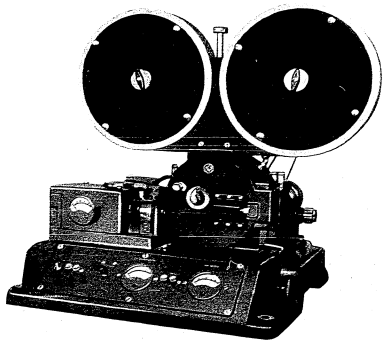

Fig. 21. 3К Recording Device

3К Recording Device (Fig. 21), which records sound tracks on 35-mm film by the variable area method. Recording is of the normal or push-pull noiseless method with standard or double area sound track.

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The speed stabilizer (magnetic drive) used with the device ensures unfailing uniformity of film speed past the exposure slit. The light modulation system of the recording device allows for recording with ultra-violet and white light.

Reliability of construction and the high-precision workmanship of its parts provide lasting service, the device being readied for operation by simple insertion of magazines and threading of film. Correct setting of exposure lamp and magnetic drive exciter coil is achieved by means of rheostats, which ensure smooth adjustment controlled by adequate instruments.

Overall dimensions of recording device (height × lenght × width) 640 × 560 × 550 mm
Weight of recording device . . . . . 102.3 kg

12 У-5, type 2 Preamplifier (Fig. 22), which mixes and preamplifies incoming signals from the microphones, and allows simultaneous connection of four microphones. The amplifying range permits use of microphones of any type, even under most unfavourable conditions.

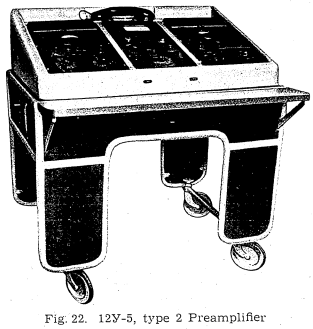

Fig. 22. 12У-5, type 2 Preamplifier

The adjustment range of the frequency characteristics in both preamplifier and main amplifier makes provisions for the requirements of recording in studios.

The electro-mechanical properties of the level indicator mounted in the preamplifier enable full visual control of the volume of signals recorded.

The extremely low level of interferences throughout the amplifying channel is achieved by the electric characteristics of the amplifier input transformers and the type of shields used with them, thus limiting the dynamic range of the recording only by the quality of the film used.

The preamplifier is styled as a panel supported by a movable table equipped with swivel rollers. The device is ready for operation after simple connection to the switchboard by means of connecting cables.

Overall dimensions of preamplifier (height × length × width) . . . . . 1,010×890×600 mm
Weight of preamplifier . . . . . 92.2 kg

12 У-4, type 2 Main Amplifier (Fig. 23), which is intended for subsequent amplifying of signals from the preamplifier, and for compressing and limiting the output volume. The main amplifier includes a monitor amplifier channel and a loudspeaker, which enable perfect monitoring of the recording.

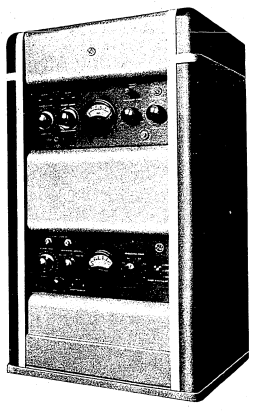

Fig. 23. 12У-4, type 2 Main Amplifier

Control of the main amplifier circuit current is provided by a highly-sensitive instrument with push-button change-over control.

The main amplifier is styled as a metal cabinet accomodating the chassis of both recorder and intermediate amplifiers; the front panel of the cabinet is easily removable to give access to the tubes. Free access to the amplifier parts is provided by the hinged chassis and special rods, allowing to swing the chassis off.

Overall dimensions of the amplifier (height × length × width) . . . . . 912 × 525 × 365 mm
Weight of amplifier . . . . . 50 kg

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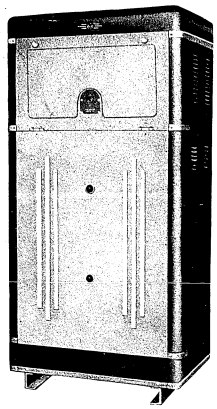

Fig. 24. 12M-3 Power-supply Device

12 M-3 Power-supply Device (Fig. 24), which supplies all high and low voltage D. C. circuits with stabilized rectified current. Power is fed to the device from standard 127/220 V, 50-cycle A.C. mains.

The power-supply device ensures the unfailing stabilization of rectified current in a wide range of line voltage variations.

The rectifiers and stabilizers of the power-supply device are mounted in a single cabinet.

Overall dimensions of the power-supply device (height × length × width) . . 1,240×640×400 mm
Weight of device . . . . . 151 kg

7 K-7 Switchboard Panel (Fig. 25), which serves the power-supply device. The switchboard panel is installed in the recording-room and provides for remote switching of the power-supply device and control of its operations.

Overall dimensions of panel (height × length × width) 490 × 550 × 550 mm
Weight of panel . . . . 22.6 kg

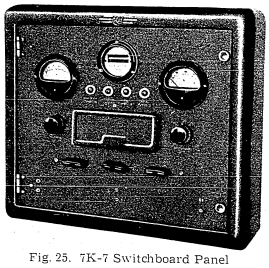

Fig. 25. 7K-7 Switchboard Panel

Switching Equipment, which consists of the 6 K-50 main switching unit (Fig. 26), two 6 K-18 studio panels (Fig. 27 and 28), a set of connecting cables and designed for centralized switching of preamplifier and recorder.

Overall dimensions of the 6K-50 main switching unit (height × length × width) . . . . . 643 × 563 × 123 mm
Weight of main switching unit . . . . 20 kg
Dimensions of the 6K-18 panel . . . . 90 × 482 × 103 mm each
Weight of each panel . . . . . 2.3 kg

Communication System, which is designed for telephone communications between studio and central recording-room.

25 A-7 Monitor Loudspeaker (Fig. 29), which serves for monitoring recording being made in central recording-room.

Overall dimensions of loudspeaker (height × length × width) . . . . . 600 × 700 × 300 mm
Weight of loudspeaker . . . . . 9.3 kg

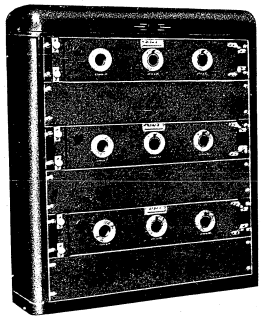

Fig. 26. Switching Unit

25 A-6 Monitor Loudspeaker (Fig. 30), which enables high-standard audio checking in a special demonstration room thanks to the electroacoustical properties of the speaker.

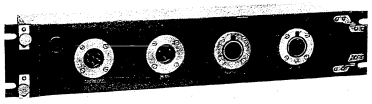

Fig. 27. 6K-18 Switching Panel

Fig. 28. 6K-18 Switching Panel

Overall dimensions of loudspeaker (height × length × width) . . . . . 860 × 720 × 430 mm
Weight of loudspeaker . . . . . 41 kg

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TABLE
of K3YC Sound Film Recorder Sets

Model		Main Units of the Set						
Symbol	Characteristics of the model	Recording device	Preamplifier	Main amplifier	Power supply device	Switching equipment	Communication system	Monitor loudspeaker
K3YC-5	Basic model	3K-4	12 Y-5, model 2	12 Y-4, model 2	12 M-3, model 2 with 7 K-7, model 2 switchboard	6 K-50 with two 6 K-18 panels	Available	25 A-7 and 25 A-6
K3YC-6	Recording device with optical system for double area sound track recording	3K-5	12 Y-5, model 2	12 Y-4, model 2	12 M-3, model 2 with 7 K-7, model 2 switchboard	6 K-50 with two 6 K-18 panels	Available	25 A-7 and 25 A-6
K3YC-7	Recording device has set of optics and spare parts, which allow change-over to double area sound tracks for studio work	3K-4	12 Y-5, model 2	12 Y-4, model 2	12 M-3, model 2 with 7 K-7, model 2 switchboard	6 K-50 with two 6 K-18 panels	Available	25 A-7 and 25 A-6
K3YC-8	Similar to K3YC-5, but supplied with power from 60-cycle frequency mains	3K-6	12 Y-5, model 2	12 Y-4, model 2	20 B-6 with 50 K-2 switchboard	6 K-50 with two 6 K-18 panels	Available	25 A-7 and 25 A-6
K3YC-9	Similar to K3YC-7, but supplied with power from 60-cycle frequency mains	3K-6	12 Y-5, model 2	12 Y-4, model 2	20 B-6 with 50 K-2 switchboard	6 K-50 with two 6 K-18 panels	Available	25 A-7 and 25 A-6

The main wiring of the recorder is of the stationary type. Detachable wiring consists of flexible cables provided with special connectors to ensure dependable connections.

Fig. 29. 25A-7 Monitor Loudspeaker

Fig. 30. 25A-6 Monitor Loudspeaker

Weight of the complete sound recorder set packed in carrying cases is about 1,100 kg.

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КПЗ-1 FILM RE-RECORDING EQUIPMENT

The КПЗ-1 Re-recording Equipment is adapted for sound re-recording on 35-mm film from photographie sound tracks and magnetic tapes as well as for sound recording of announcer's speech.

The equipment provides for simultaneous high-standard sound re-recording from eight sound tracks recorded on 35-mm film.

The equipment provides a wide range of independent volume control and adjustment of signal frequency characteristics of the re-recorded sound from 50 to 8,000 cycles.

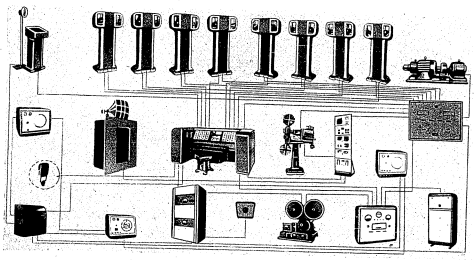

Fig. 31. General Scheme of КПЗ-1 Re-recording Equipment

The interlock drive system of the equipment ensures travelling of the film through the sound reproducing device and projector at a speed of 24 picture frames per sec with power frequency of 50 cycles.

The complete set includes the following units (Fig. 31):
Eight sound reproducing devices.
Re-recording control panel.
Interlock drive system.

Loudspeaker communication and command system.
Recorder device.
Sound reproducing unit and accessories.
Projector.

4 P-1 Sound Reproducing Device (Fig. 32) of the КПЗ-1 re-recording equipment has a new design: besides the film-transporting mechanism with an optical scanning system it is provided with a photoelectronic multiplier and a stabilized power supply source for exposure lamp and amplifier.

The mechanism is power-driven by the 5 M-1 motor of the interlock system.

A smooth-surface drum of reduced diameter provides for a high degree of stabilization of film-travelling speed.

High-standard performance of the device and the possibility for sound reproducing from any kind of sound track are achieved by the system of optical scanning.

The device provides passage for film loops with a diameter from 2 to 15 metres.

Swift rewinding of 300-metre film roll in 1.5 minutes is an important service feature.

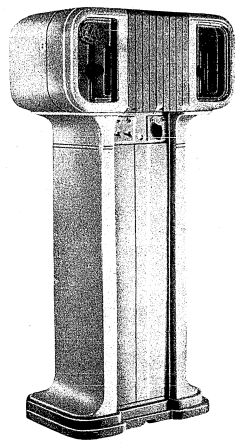

Fig. 32. 4P-1 Sound Reproducing Device

70 K-1 Re-recorder Control Panel (Fig. 33) centralizes the main units controlling re-recording operations, such as: adjustment of volume and frequency characteristics of 8 channels; switching of input circuits and their supplementary adjusters, amplifier adjusting devices and limiting filters, signal and loudspeaker communication system, etc.

Ease in transportation is a special feature of the panel design: it may be dismantled into three separate parts and easily assembled again on arrival.

Easy access is provided for inspection and repairs of panel parts. Highly identical channel characteristics and reduced response of adjuster link coils to exterior magnetic fields is achieved by the use of asylferrous rings in the design of filters and coils.

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The channel layout is of the two-way system using mixing transformers, and achieves high values of transitory channel fading.

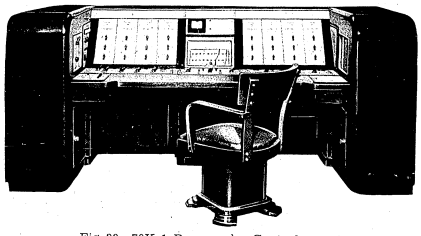

Fig. 33. 70K-1 Re-recorder Control Panel

Interlock Electric Drive of sound-reproducing devices and the projector is effected by the 4M-4 generator-governor (Fig. 34) driven by a synchronous motor and provides a film-travelling speed of 24 pict. frame per sec, with a 50-cycle frequency of the power supply mains.

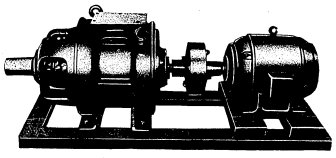

Fig. 34. 4M-4 Generator-Governor

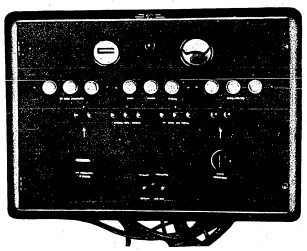

Fig. 35. 7K-9 Main Terminal Board

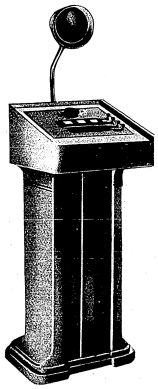

Fig. 36. 80K-1 Control Desk

The drive is fed from the 7 K-9 main terminal board (Fig. 35). Remote control of the drive is achieved by means of the 80 K-1 control desk (Fig. 36) installed in the reproducer booth. Synchronous stoppage of the system may be effected from the re-recorder control panel and the signal panel in the re-recorder booth.

Loudspeaker Communication and Signal System consists of self-contained 11 K-3 communication panels (Fig. 37) situated in adequate operation spots, and various units of communication and signals of the control panels 11 K-2 (Fig. 38).

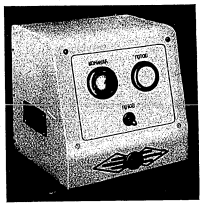

Fig. 37.
11K-3 Communication Panels

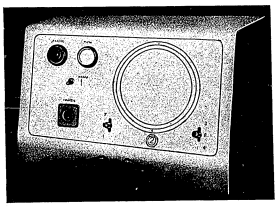

Fig. 38.
11K-2 Control Panels

The signal system is intended to relay general and local signals in accordance with studio routine.

The loudspeaker communication system maintains communications between the main channel control panel and corresponding operation locations, as well as direct two-way communications between any of these locations.

Recorder Device used with the КПЗ-1 re-recording equipment represents a modified set of the КЗУС sound recorder serial. It consists of the following units:

3K-4 Sound recording apparatus (Fig. 39).
100У-2 Main amplifier (Fig. 40).
12M-3 Power-supply device (Fig. 41).
6K-50 Switching unit (Fig. 42).
30A-3 Two-band speaker (Fig. 43).
7K-7 Control panel (Fig. 44).

The 7K-7 Control panel for 12M-3 power-supply unit is somewhat modified to meet requirements of supplying the equipment directly from the supply mains or through the main terminal board.

Sound Reproducing Unit and Accessories used with the КПЗ-1 re-recording equipment are of the КУСУ-52 sound reproducing equipment type, detailed features of which are given in the catalogue.

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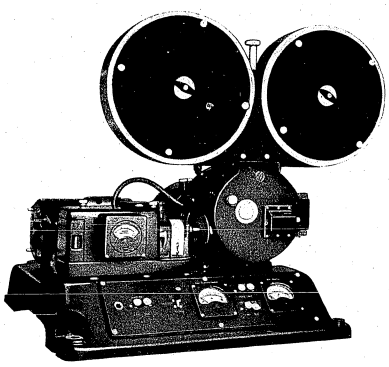

Fig. 39. 3K-4 Sound Recording Apparatus

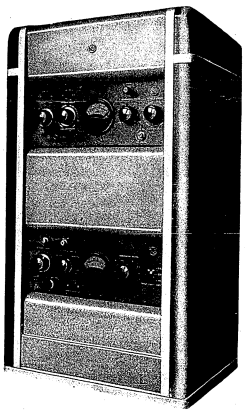

Fig. 40. 100У-2 Main Amplifier

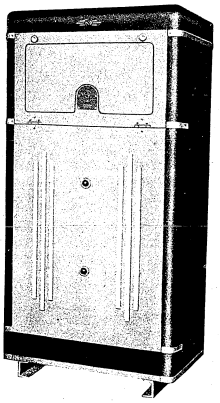

Fig. 41. 12M-3 Power-supply Device

The КПТ-1 Stationary Projector has been somewhat modified for use with the КПЗ-1 re-recording equipment, the asynchronous electric projector motor being substituted by a 5M-2 self-synchronizing electric motor with a special reduction gear providing

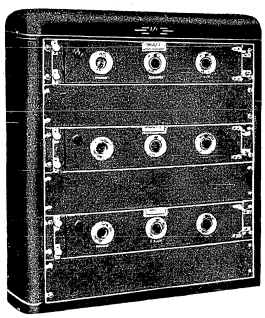

Fig. 42. 6K-50 Switching Unit

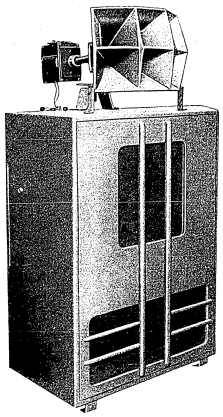

Fig. 43. 30A-3 Two-band Speaker

precise conformity of the film-travelling speed within the projector and reproducing device. The projector is equipped with an automatic shutter which cuts the light beam when operation ceases.

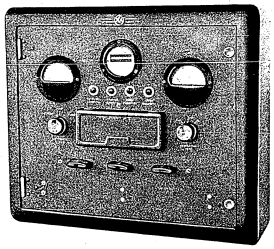

Fig. 44. 7K-7 Control Panel

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For the convenience of small studio outfits a somewhat modified set of re-recording equipment КПЗ-2 is made available for simultaneous re-recording from four sound reproducing devices.

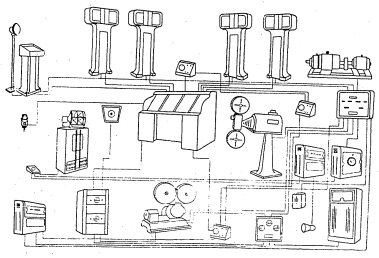


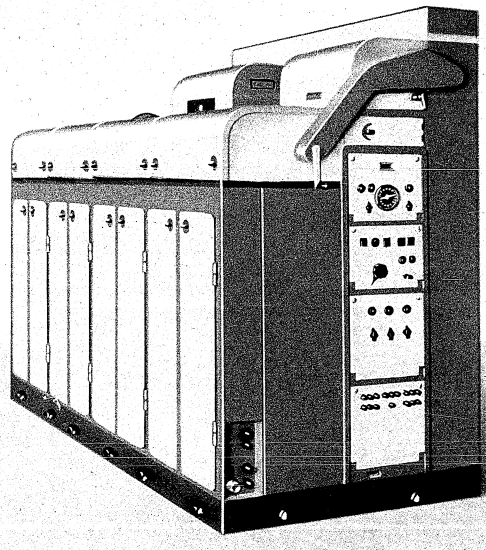
Fig. 45. General Scheme of КПЗ-2 Re-recording Equipment

The design of the КПЗ-2 equipment is similar to that of the КПЗ-1, but it has only four 4Р-1 sound reproducing devices and a 70К-2 re-recorder panel.

A general scheme of КПЗ-2 equipment is shown in figure 45.

Three-phase A.C. 220 V, 50-cycle mains provide the power supply.

Power consumption is approx. 10 kW.



LABORATORY EQUIPMENT

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40П-1 AUTOMATIC DEVELOPING MACHINE

The 40П-1 Automatic Developing Machine (Fig. 46) performs photo-chemical processing of negative and positive 35-mm black-and-white film.

The film-threading mechanism of the machine is covered with a light-proof metal hood, allowing film processing in a lighted room.

The machine consists of two self-contained developing systems for both positive and negative films with a multi-loop arrangement of the films.

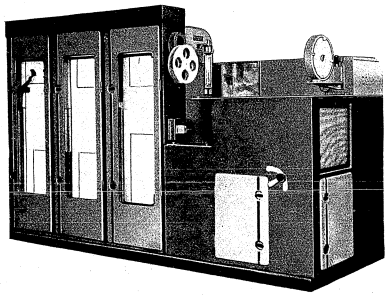

Fig. 46. 40П-1 Automatic Developing Machine, view from side of drier cabinet

The frame of the Developing Machine is conveniently furnished with four rollers, allowing easy moving of the equipment.

Mechanical damage to film perforations during the processing is eliminated by the use of frictional methods of film transportation.

The Developing Machine is provided with an interlocking device for:

a) automatically shutting off the machine drive when film breakage occurs in the wet part of the film path, and when the lower rollers of the threading magazine reach their extreme upper position;

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b) sounding of warning signal when the feed reel is empty.

A constant temperature of the developing solution at $20 \pm 0.3^{\circ}$C is automatically maintained by an air-conditioning device (heater and cooling device).

Uniform conditions of film drying are ensured by the smooth adjustment of heating temperatures and incoming air.

The Automatic Developing Machine consists of the following parts:

Framework on which all assemblies and units are mounted;

Tanks;

Wet part of the film-threading path, including film transportation mechanism;

Drier cabinet with transportation and winder mechanisms;

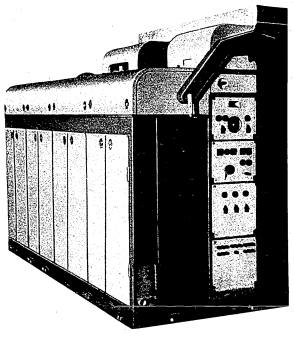

Fig. 47. Developing Machine Control Panel

Air-conditioning system, consisting of: a) filter, b) blower fan with electric motor, c) baffle for controlling air blast entering the drier cabinet, d) air duct to squeegee, e) electric air-heating apparatus;

Plumbing system, consisting of: a) water conduit to washing tanks and thermostat, b) sewer line for drainage from all tanks, c) hypo line for pumping hypo from the second tank to the first one by means of electrically-driven pump, d) hypo recovery line from first tank of final washing, e) two independent developer lines (negative and positive) with pumps providing circulation of developing solution and thermostat for maintaining constant temperature, f) supply lines of developer systems with replenishment from metering tanks;

Driving mechanism which is an electric motor with variable speed reduction gear;

Control panel on which are mounted all instruments of control (Fig. 47);

Hoods for the replenisher metering tank, machine driving mechanism and solution conduits;

Light-proof magazines.

SPECIFICATIONS

Output of the Automatic Developing Machine varies from 50 to 300 metres per hour, the developing time varying accordingly from 16 to 2.5 min.

Power supply from three-phase 220 V, A. C. mains.

Power consumption — 11 kW.

Time of film processing stages, in minutes:

Processing Stage	For Positive Film		For Negative Film
	Basic processing speed of 200 metres per hour	Increased processing speed: 300 metres per hour	
Developing	4	2.7	16
Intermediate rinsing	1.4	0.9	5.6
Fixing	4	2.7	16
Final washing	6.1	4	24.4
Drying	20	13.3	80
Total time	35.5	23.6	142

Overall dimensions of Automatic Developing Machine . . . . . 2,900 × 1,965 × 1,100 mm

Weight of machine:

without solutions . . . . . 1,000 kg

with solutions . . . . . 2,060 kg

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КПЭ-2 FILM SAMPLE PRINTER

The Sample Printer (Fig. 48) prints samples from 35-mm negatives on positive film, facilitating correct selection of the exposure and light number for release printing of motion picture films by continuous printing.

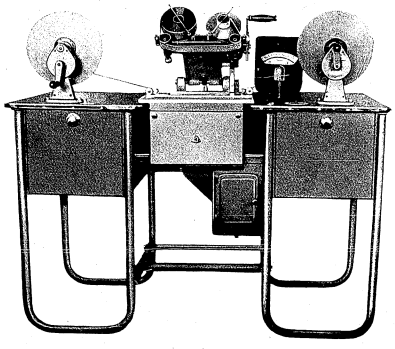

Fig. 48. КПЭ-2 Film Sample Printer

The Sample Printer provides for simultaneous printing of negative lengths of ten picture frames each (Fig. 49 and 50), showing uniform photographic density with ten different illumination intensities corresponding to those of the continuous printer; printing is achieved by contact method. This facilitates the selection of convenient exposure conditions for the printing of each negative film length by visual inspection of the positive sample and comparison of the ten images of different exposure.

Illumination of the printing gate is provided by a single light source. Interposition in the light path of the film-channel gate of

neutral-grey light filters allows for the establishment of different illumination stages.

The exposure time is adjusted by modifying the shutter slit dimensions.

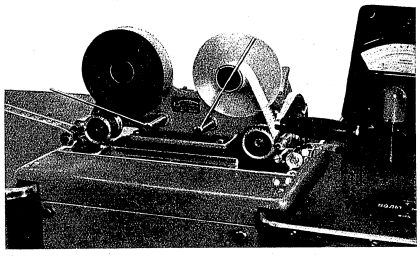

Fig. 49. КПЭ-2 Printer Head

The head is lowered by hand.

Rewinding of positive film, shutter operations, and lifting of head are effected automatically by pressing a lever.

The Printer is equipped with adequate instruments providing for control of operating conditions and adjustment of printer lamp.

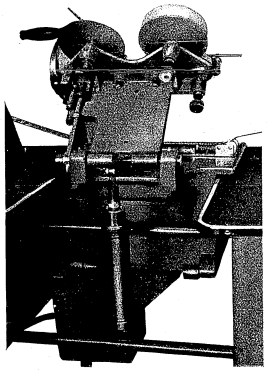

Fig. 50. КПЭ-2 Printer Head, rear view

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SPECIFICATIONS

Capacity of film magazines:	
for positive film	60 metres
for negative film	300 metres
Illuminating system fed with	110—120 V D. C.
Printer lamp	300 W, 110 V
Maximum exposure time	0.05 sec
Overall dimensions of printer (length × width × height)	1,360×660×1,230 mm
Weight of printer	150 kg

УКА SOUND FILM PRINTERS

Available are three serial models of the УКА Sound Film Printer:

УКА-М — for mass release printing on 35-mm film from density-corrected duplicated negatives of black-and-white motion picture films.

УКА-Ц — for mass release printing on positive 35-mm multilayer colour film.

УКА-Т — for routine printing on 35-mm film of colour and black-and-white motion pictures.

Model УКА-М

The УКА-М Printer (Fig. 51) is for mass release printing on 35-mm film of black-and-white motion pictures in motion-picture printing laboratories.

The machine prints from density-corrected duplicated negatives, each portion film roll being printed under constant illumination of the printer film gate. Changes of image printing illumination are achieved by diaphragms with different apertures, which are inserted into a special recess in the light beam path.

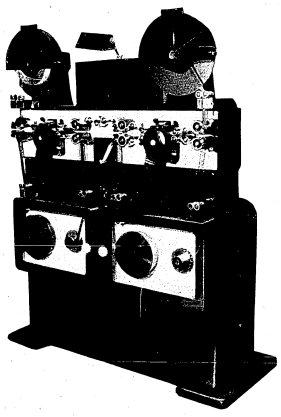

Fig. 51. УКА-М Printer

The УКА-М Printer is the basic model for all other printers.

Model УКА-Ц

The УКА-Ц Printer (Fig. 52) is for mass printing on 35-mm multilayer film of colour sound films in motion-picture printing laboratories.

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The machine prints from multi-layer colour negatives or duplicated negatives. Change of image printing illumination is produced by the AP automatic device, which shifts a light control band with punched openings and light-filters. Fore filter holders mounted in special recesses in the path of the light beam are provided.

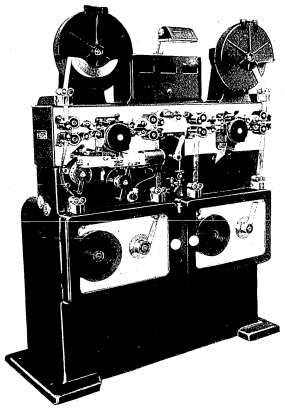

Fig. 52. УКА-Ц and УКА-Т Printer

Model УКА-Т

The УКА-Т Printer (Fig. 52) is for regular printing on 35-mm film of black-and-white sound films in motion-picture printing laboratories.

Printing is done from negatives. Change of image printing illumination is achieved by the AP automatic device which shifts a light control band with punched openings. The machine may be adapted for regular printing of colour films if a control band similar to that of the УКА-Ц model and fore filters are fitted to it.

Reverse drive allows printing without rethreading the negatives.

All the models of the УКА Printer are designed on basically similar lines, which facilitates repairs and maintenance.

Spare lamps and necessary tools are supplied with the УКА Printers. On special order the УКА Printers may be provided with the following accessories:

a) Jack-bogie for transportation (Fig. 53).

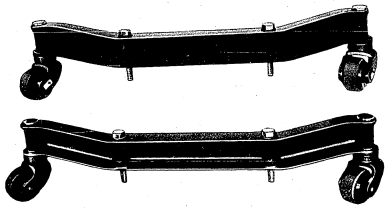

Fig. 53. Jack-bogie for transportation of УКА Printers

b) ПМД-3 Light Control Band Puncher (Fig. 54) for punching circular apertures on a 35-mm perforated paper band when making light control bands for УКА-Ц and УКА-Т Printers.

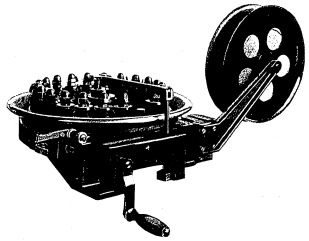

Fig. 54. ПМД-3 Light Control Band Puncher

The Puncher has 20 circular punches of various diameters from 6.2 to 22 mm; the punching is done by hand.

c) The МБП-3 Slot Cutting Machine (Fig. 55) for cutting lateral slots in negative films to achieve switchover impulses of the light control band in УКА-Ц and УКА-Т Printers.

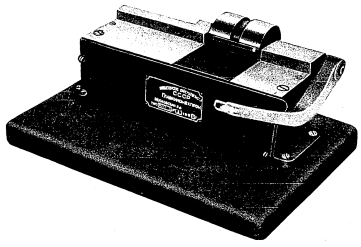

Fig. 55. МБП-3 Slot Cutting Machine

d) The ПМЦ-1 machine for stapling of light control bands used with УКА-Ц Printers, the stapling being done by means of metal staples.

SPECIFICATIONS

(common to all УКА models)

Path of film travel	continuous in one plane
Direction of film travel	reversible
Speed of film travel	up to 1,040 metres per hour

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Printing method	by contact, over sprockets with bilateral compressed air contacting arrangement
Capacity of film magazine	300 metres
Printing lamp	300 W incandescent lamp
Power supply of printing lamps	from 100 V D. C. line
Adjustment of power supply to printing lamp	by means of rheostats
Control of power supply to printing lamp	by means of measuring instruments on control board
Adjustment of sound track printing gate illumination	by means of diaphragms
Electric drive	1,440 r. p. m., 220 V, 50 cycles asynchronous three-phase electric motor
Control of electric drive	by means of reversible electromagnetic starter
Local illumination	by means of a 220/24 V transformer
Interlocking devices work when:	a) printing lamps burn out, b) spool ends, c) pressing clamp of the printing assembly is not secured, d) negative film (in VKA-M model) tears.
Film cleaning	by filtered air provided by the ventilation system
Overall dimensions of printer (length × width × height)	1,320×560×1,380 mm
Weight of Printer (in carrying cases)	1,000 kg

MM-11 FILM RENOVATION MACHINE

The MM-11 Film Renovation Machine (Fig. 56 and 57) eliminates mechanical damage from the film base, and plastifies it.

Elimination of damage is achieved by the method of superficial dissolving of the film base by highly-volatile solvents, followed by rolling of the base over a glass disk with a matte or glossy surface.

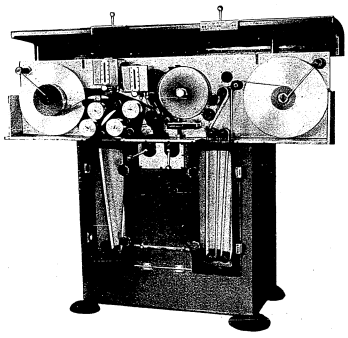

Fig. 56. MM-11 Film Renovation Machine

The essential parts of the machine are: frame, electric drive, winding device for 600 metres of film, cleansing device, post-cleansing drying chamber, pressure rollers, renovation assembly, take-off rollers, post-renovation drying chamber, winding device, mechanism for lifting and lowering of the solvent bath, solvent tank, solvent vapour-exhausting system, control panel.

The cleansing device effects damp cleansing of the film base and dry cleansing of the emulsion side.

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Design of the pressure rollers ensures adjustment of the film pressure against the glass disk.

Solvents are fed automatically.

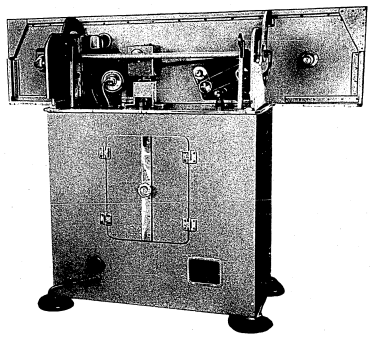

Fig. 57. MM-11 Film Renovation Machine, rear view

Quick lifting and lowering of the bath is achieved by a special mechanism, which also adjusts the humidifying rate of the glass disk and of the solvent level in the bath.

SPECIFICATIONS

Speed of film travel	250 and 500 metres per hour
Machine drive	0.52 kW explosion-proof asynchronous electric motor
Film-threading chambers	airtight
Overall dimensions of machine	1,320×1,590×550 mm
Weight of machine	400 kg

РУП-1 CUTTING MACHINE

The РУП-1 Cutting Machine (Fig. 58) cuts 32-mm film into two 16-mm film strips.

Machine drive is provided by an asynchronous electric motor with reduction gear.

The cutting mechanism consists of two knives fitted on parallel shafts and rotating in opposite directions.

The special design of the knives achieves high-precision film-cutting.

The upper and lower disk-shaped knives are protected by hoods for operation safety and prevention of winding of cut film around the knives.

A 165° portion of the lower knife circumference is encircled by the film held down by pressure roller.

Film transportation within machine is performed by the lower knife and two take-up devices.

The film-feed device is installed in the lower part of the machine, consisting of an open spool fastened on a freely-rotating spindle with an adjustable brake. The spool is designed for use with a standard 50-mm core or with a special 100 mm-diameter core.

Over the feeding device is fitted a guide roller which directs the film to a 20-tooth sprocket. The sprocket and the two upper take-up devices ensure the necessary film tension around the lower knife.

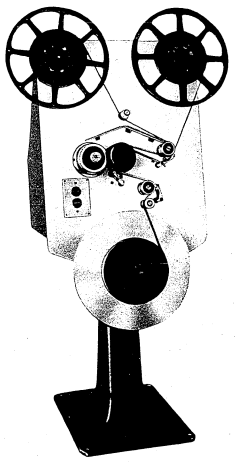

Fig. 58. РУП-1 Cutting Machine

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The upper 20-tooth sprocket is intended to align tensioning on the take-up device of both film strips (after cutting) in order to prevent disalignment of the film on the knife.

The moving parts of the machine are mounted on ball bearings.

SPECIFICATIONS

Speed of film transportation	28.9 metres per min or 1,730 metres per hour
Maximum length of roll to be cut	600 metres
Diameter of core:	
with 120-metre reel	50 mm
with 600-metre reel	100 mm
Width of strip being cut	15.95 ± 0.05 mm
Power supply	from three-phase, 127/220 V, 50-cycle mains
Electric motor drive	0.25 kW, 1,500 r. p. m.
Overall dimensions of the machine	1,635×570×855 mm
Weight of machine (in carrying cases)	320 kg

КСП-3 FILM STAPLER

The КСП-3 Stapler (Fig. 59) is designed for mechanical splicing of 35 mm motion-picture film ends.

Wire staples are used for the splicing. They are loaded into the stapler in 100-piece packages.

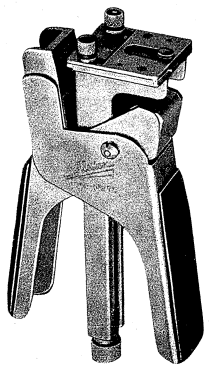

Fig. 59. КСП-3 Film Stapler

Pressing of the Stapler handles automatically releases one staple to fasten the film ends.

The Stapler is hand-operated and extremely easy to handle.

Overall dimensions of the Stapler	32×85×160 mm
Weight of Stapler	400 g
The staples are	of 11 × 6 mm size

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35-3MA-3 SOUND EDITOR

The 35-3MA-3 Sound Editor (Fig. 60) is designed for sound editing of 35-mm film and performs the following processes:

Synchronization of basic sound track, music and noises with image.

Synchronization of sound track and sound film during doubling and editing.

Synchronous visual and audible control of film from separate "picture record" and "sound record" films.

Visual and audible control of the edited film or parts of it.

The essential process of sound editing — synchronization of "picture record" and "sound record" films is achieved in two stages:

a) The "picture record" film is shifted by means of an electrical drive in forward or reverse direction at a speed of 5—30 picture frames per sec, while tho "sound record" film is stationary.

b) Shifting of the "sound record" film relatively to the "picture record" film is accomplished by hand through a differential mechanism in the process of a simultaneous running of both films. This provides great convenience in editing sound films.

The Editor is adapted for simultaneous visual and audible control of image and sound track printed on one film. This makes the Editor desirable for foreign-language doubling.

The design of both Editor viewing and sound heads provides for easy threading of the film, and allows winding of film on spools or special hubs, as well as a free travel of the film from the device. Provision is made for editing of film lengths of 3—4 picture frames.

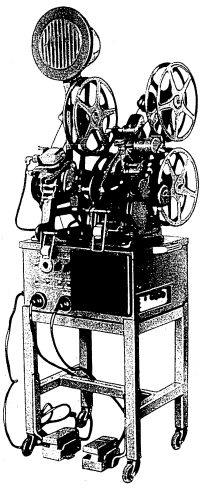

Fig. 60. 35-3MA-3 Sound Editor

Starting, stopping and reversal of sound-head and projector-head electric motors, adjustment of motor speed, switching of amplifier of sound and projector lamps are achieved by means of switches and rheostats conveniently located for operation.

The Editor's projector system does not require a darkened room.

The Editor's mechanism, its electric drive, amplifier and loudspeaker are mounted on a metal table equipped with four swivel wheels on rubber tires.

Light weight, small overall dimensions and ease in dismantling make the device convenient for use in studios and laboratories, and in outdoor conditions.

SPECIFICATIONS

Power supply . . . . . from 110 V, 50 cycle A. C. mains

Power consumption . . . . . 600 W

Projector (viewing) head. Film propelling is achieved by means of a maltese cross mechanism with a 16-tooth transporting sprocket. Precision workmanship of the mechanism parts ensures a noiseless performance.

The image is viewed through a picture-frame gate by means of a magnifier mounted in the gate of the film channel.

The image is magnified to 3 times its size.

Projection lamp — 15 W, 110 V with E-14 socket.

Power drive — 65 W, 110 V, 6,000 r. p. m. commutator motor.

The design of the picture-frame gate provides for easy setting of synchronous control marks on the film.

Sound head. Uniform propelling of the film is achieved by a 16-tooth sprocket.

Differential gearing allows quick and slow propelling of the "sound record" film. The head also permits use of 17.5-mm films with unilateral perforation (halved 35-mm film).

The design of the film channel gate provides for setting of synchronous control marks on the film.

A current of supersonic frequency is supplied to a 3 W, 4 V exciter lamp from a lamp generator.

The photoelectric cell — of type ЦГ-3.

Power drive — 50 W, 110 V, 50 cycle, 1,500 r.p.m. asynchronous single-phase condenser-type electric motor.

Film-winding device. Projector and sound heads are provided with reversible winding devices and dismountable reels of 300-metre film capacity. For small film rolls (up to 80 metres) the device has special hubs mounted on swinging brackets.

Amplifier and loudspeaker. The 1У-7 Amplifier is installed in the metal box of the projector table.

Nominal output volume of the sound frequency is 2.5 W, the non-linear distortion factor not exceeding 3 % at 1000-cycle frequency and 5 % at 100-cycle frequency.

The band of reproduced frequency ranges from 50 to 8,000 cycles.

The amplifier power-supply voltage is 110 V, 50 cycles.

Electronic tubes used with the amplifier are: 6Ж7 (2 pcs.), 6П3 or 6Л6, УО186, 5Ц4с.

The 4-А-18 loudspeaker is fitted on a special bracket above the sound head.

Various accessories and spare parts are supplied with the Editor.

Overall dimensions of the Editor . . 500×600×1,600 mm

Weight of Editor . . . . . 100 kg

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35-ММПС-3 SUBTITLE MAKING MACHINE

The Subtitle Making Machine prints subtitles on 35-mm film by the mechanical method with use of clichés.

Main advantages of the mechanical method of subtitle printing are: printing on ready-made films and simplicity of technical process allowing printing of subtitles at film-exchange offices.

The complete set includes:

35-ММПС-3 Subtitle Making Machine for Mechanical Printing (Fig. 61), which consists of the following units: assembly for

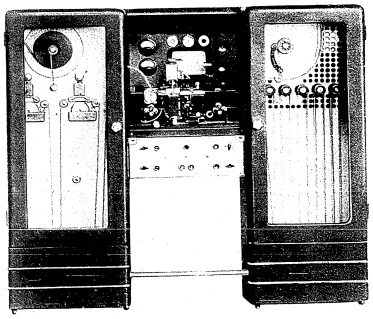

Fig. 61. 35-ММПС-3 Subtitle Making Machine for Mechanical Printing

dampening of the film-emulsion layer by special solvents; assembly for printing subtitles on softened film-emulsion layer by means of heated matrix-clichés; film drying assembly (after printing of subtitles) working on warm air from heating devices and fan; control panel for all elements of operation.

The subtitle printing assembly has a printing mechanism, a light-control band head and a projector device intended for checking quality of printed subtitles.

The design of the machine allows operation of the printing machine by hand, semi-automatically, or automatically.

Subtitle-printing speed ranges from 2 to 15 picture frames per sec.

Length of film rolls to be subtitled	300 metres
Projection lamp	21 W, 12—16 V
Pilot lamp	8 W, 110 V

35-СПС-1 Bench for Synchronized Printing (Fig. 62), which produces control bands for automatic subtitle printing on 35-mm film with the 35-ММПС-3 machine.

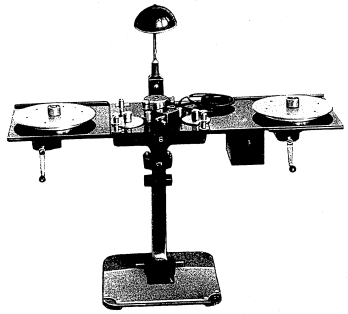

Fig. 62. 35-СПС-1 Bench for Synchronized Printing

The bench consists of the following units: synchronizer, control band puncher, and rewinding device

Rewinder reel capacity	300 metres
Rotation of synchronizer	achieved by film tensioning
Film travelling	in horizontal plane.

МРК-2 Cliché Cutting Machine (Fig. 63), which is a milling machine designed to cut ready 120×160-mm cliché plates into separate 8×22-mm matrixes.

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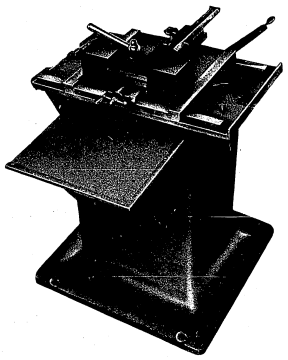

Fig. 63. MPK-2 Cliché Cutting Machine

SPECIFICATIONS

Power supply	220/380 V, 50 cycle, A. C. mains
35-ММПС-3 machine total power consumption	2.7 kW
Overall dimensions:	
35-ММПС-3 machine	1,490×1,670×510 mm
35-СПС-1 machine	1,300×1,250×600 mm
МРК-2 machine	970×670×630 mm
Total weight of 35-ММПС-3 subtitle making machine	approx. 650 kg

35-СПА-2 SEMI-AUTOMATIC FILM SPLICING MACHINE

The 35-СПА-2 Semi-Automatic Film Splicing Machine (Fig. 64) is designed for splicing 35-mm standard perforated or unperforated film. The Semi-Automatic Splicing Machine performs shearing, scraping, splicing, and pressing of spliced film ends.

The machine is for use in film-manufacturing factories, film-printing laboratories and film-exchange offices.

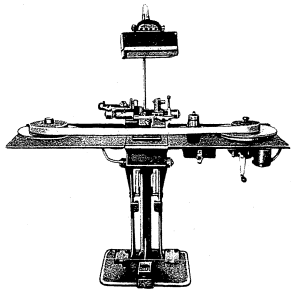

Fig. 64. 35-СПА-2 Semi-Automatic Film Splicing Machine

The Semi-Automatic Splicing Machine offers speed, ease and high efficiency in the film-splicing process.

Speedy drying of the splices is ensured by a heating device. The machine has illuminators under the path of the film and above the splicing machine head.

Replaceable ground-glasses (white) and a set of nonactinic red light-filters are provided with the illuminating devices.

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SPECIFICATIONS

Power supply	from 110 V A. C. mains
Straight splice, width of splice	3 mm
Film rewinding	by hand or electric drive
Geared rewind reel	1 : 3 ratio, acceleration type
Commutator motor	110 V, 25 W, 3,600 r. p. m., sealed type
Change of motor speed	by pedal-operated rheostat
Travel of motion picture	in horizontal plane
Power consumption	approx. 150 W
Height (from floor) of bench surface	780 mm
Overall dimensions of Splicer	697 × 1,000 × 1,285 mm
Weight of Splicer	95 kg

35-CO-1 SYNCHRONIZER

The Synchronizer (Fig. 65) is intended for synchronous alignment of two and three 35-mm motion picture films with sound and picture records during studio film-editing.

The synchronizer is a portable apparatus conveniently fitted on the Editor table without fastenings. If permanent installation is required special holes are provided to secure it to table with screws.

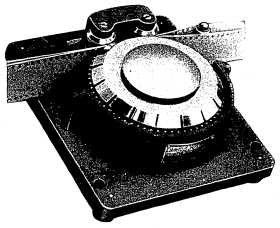

Fig. 65. 35-CO-1 Synchronizer

The Synchronizer's mechanism arranges the film rolls horizontally, and consists of a freely rotating 64-tooth sprocket and pressure rollers. The sprocket stops automatically when the rollers are swung aside.

The sprocket shaft of the Synchronizer is mounted on ball bearings and is easily rotated by the film edited. Easily rotating pressure rollers supported by special carriage effect contact of film and sprocket. A spherical push-button on the top of the sprocket swings aside the pressure rollers to release the films.

Radial etches on the Synchronizer's upper crown provide perfect picture frame adjustment by alignment with interframe film spaces.

The Synchronizer has a cast support.

Performance reliability is a characteristic feature of the Synchronizer.

Overall dimensions of the Synchronizer	180 × 145 × 85 mm
Weight of Synchronizer	3 kg

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16-ПСП 16-mm FILM SPLICER

The portable, easy-to-handle 16-ПСП Film Splicer (Fig. 66) of the bench type is intended for splicing of 16-mm positive and negative film in film manufacturing factories, film printing laboratories, studios, film-exchange offices and motion picture theatres.

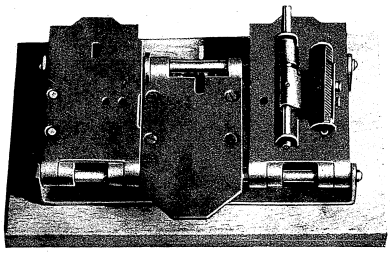

Fig. 66. 16-ПСП Film Splicer

A special device in the Splicer shears off damaged film ends when the film is fitted into the Splicer. Another special device scrapes emulsion off the film ends.

Quick replacement of the blades is facilitated by their construction. The design of the Splicer ensures standard and high-quality splicing.

Overall dimensions of Film Splicer . . . . . 150 × 90 × 51 mm
Weight of Film Splicer . . . . . 900 g

35-ПСП-3 35 mm FILM SPLICER

The 35-ПСП-3 Film Splicer (Fig. 67) is designed for splicing 35-mm positive and negative films in film manufacturing factories, film printing laboratories, studios, film-exchange offices and motion picture theatres.

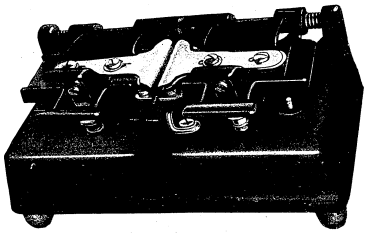

Fig. 67. 35-ПСП-3 Film Splicer

The Splicer effects shearing and scraping of the emulsion off the film ends.

The design of the Splicer ensures standard and high-quality splicing.

A bottle of cement is fitted in the Splicer frame.

The blades are easily removed for grinding.

Overall dimensions of Splicer . . . . 215×130×100 mm
Weight of Splicer . . . . . 4 kg

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ФС-2 FILM INSPECTION BENCH

The ФС-2 Film Inspection Bench (Fig. 68) is intended for rewinding, visual inspection and current repairs of 16-mm and 35-mm motion picture films.

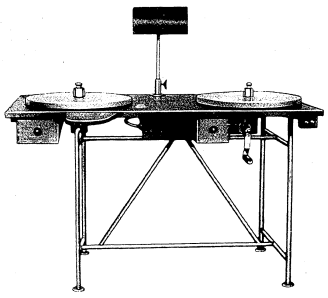

Fig. 68. ФС-2 Film Inspection Bench

The Film Inspection Bench consists of the following easily transportable and dismountable parts:

Top board with disks, driving mechanism and drawers.

Lateral bench supports (2 pcs.).

Brace.

Rewinding of 16-mm or 35-mm film rolls is effected by changing the disk cores.

The disks permit accomodation of 600-metre capacity reels of 16-mm film.

The feed and take-up disks are both provided with a breaking device for simultaneous stoppage of the disks.

Rewinding is done by hand.

Easy rotation of the take-up disk is ensured by a gear mechanism.

35-МОГ-3 HORIZONTAL FILM REWINDER

The 35-МОГ-3 Horizontal Film Rewinder (Fig. 69) is intended for rewinding 35-mm film on editing benches and semi-automatic film splicers.

Design of the Horizontal Rewinder allows easy installation on rewinding benches.

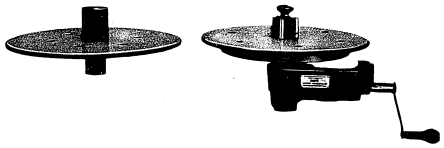

Fig. 69. 35-МОГ-3 Horizontal Film Rewinder

The Rewinder ensures close and uniform rewinding and eliminates film breakage and scratching during the winding process.

The removable cores are easily fitted on the spindles of the take-up and feed disks (empty or loaded).

Free access is provided to all friction parts for lubrication.

SPECIFICATIONS

Diameter of feed and take-up disks	300 mm
Diameter of cores: for feed disk	48.5 mm
for take-up disk	50 mm
Accelerating ratio of hand-drive gearing	1 : 3
Overall dimensions of take-up winder with disk	430 × 165 × 210 mm
Overall dimensions of feed winder	120 × 310 mm
Weight of take-up winder with disk	5.6 kg
Weight of feed winder	1.4 kg

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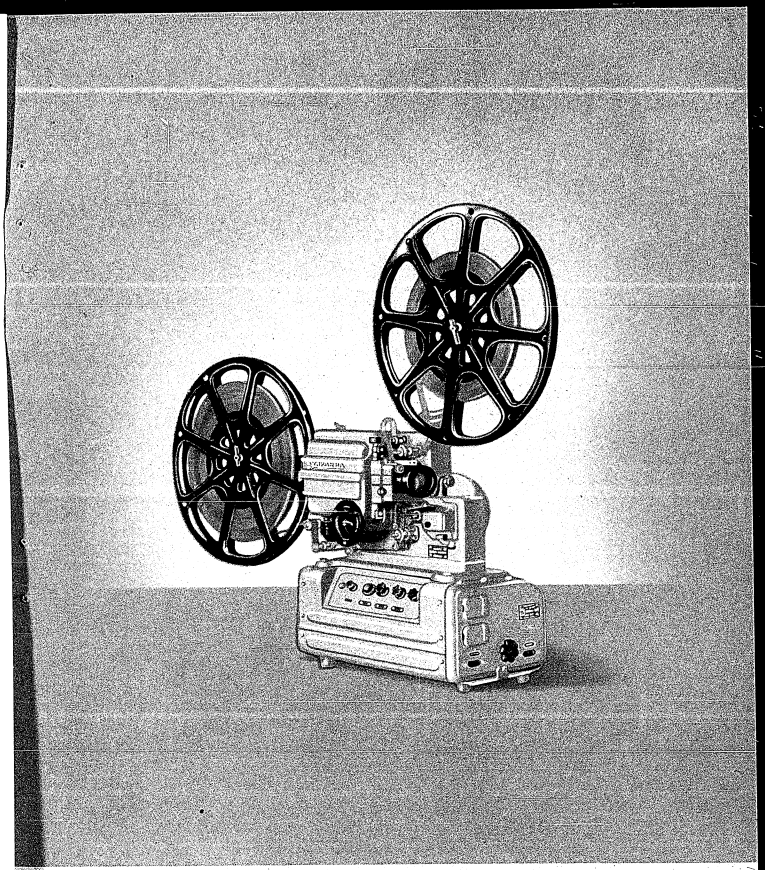

MOTION PICTURE PROJECTORS AND EQUIPMENT

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convenience in handling, low power consumption, facility in transportation, and a high degree of reliability — these and many more features characterize the unit.

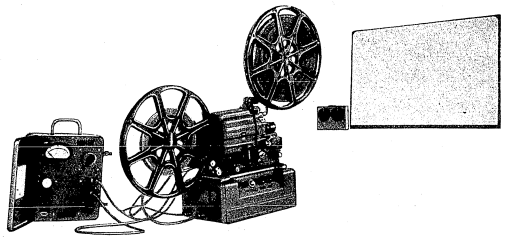

Fig. 71. Set of Sound-on-Film Projector "Ukraina"

Bright illumination of a 5-sq. metre screen is ensured by an efficient light flood of 250 lumens achieved by a lamphouse of special design, lighting optics, high-quality coated lens, and a powerful projection lamp of 400 W.

Use of non-inflammable film allows installation of the Projector directly in the auditorium, eliminating the need for a special projection booth. This is an additional feature which makes the Projector desirable for schools, clubs, village motion picture theatres and home entertainment.

The Sound-on-Film Projector "Ukraina" includes the following units (Fig. 71):

ПП-16-1 Motion Picture Projector.
КПУ-50 Amplifier (Fig. 72).
КАТ-14 Auto-transformer (Fig. 73).
ЭПП-2 Screen.

ПП-16-1 Motion Picture Projector. Power supply of Projector from single phase 110 V or 220 V, 50 cycle A. C. mains. Voltage variations in the mains are controlled by an auto-transformer.

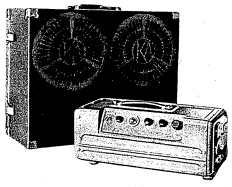

Fig. 72. КПУ-50 Amplifier with Loudspeaker

Projector drive — asynchronous single-phase 35 W, 3,000 r.p.m. electric motor.

Film motion achieved by intermittent mechanism at speed of 24 picture frames per sec.

Light source — 400 W, 30 V projection lamp.

Coated anastigmatic projection lens of 1 : 1.2 relative aperture and 50-mm focal length, providing brilliant illumination of 2.5-meter-wide screens. Lens with 35 or 65-mm focal length may also be installed in the Projector.

The efficient light flood with working shutter (without film) is approximately 250 lumens at 2,700-stilb brightness of projection lamp.

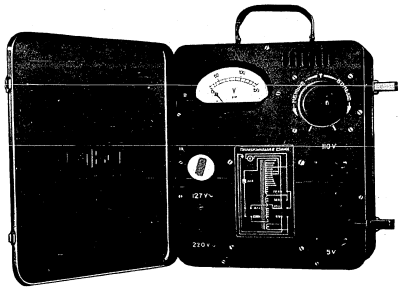

Fig. 73. КАТ-14 Auto-transformer

The 3 W, 4 V exciter lamp is supplied from a selenium rectifier, mounted in the amplifier.

The optical scanning system is cylindrical; light slit dimensions are 1.9×0.018 mm.

Take-up and feed mechanisms ensure standard performance with 120 and 600-metre film reels.

Power consumption — 550 W.

Overall dimensions of projector (packed in carrying case)	255 × 450 × 515 mm
Weight of projector (packed in carrying case)	26 kg

КПУ-50 Amplifier with Loudspeaker. Power supply — single-phase 110 V, 50 cycle A. C. mains.

Power consumption — 100 W.

Rated output volume of sound frequency – 10 W, the nonlinear distortion factor not exceeding 3% on frequencies of 500-1,000 cycles, and not exceeding 6% on boundary frequencies.

The following electronic tubes and auxiliary lamps are used in the unit:

6Ж7, 6Н9м, 6П3 (2 pcs.), 5Ц4С, МН3 (neon indicator), МН-15 (6.3 V, 0.28A incandescent lamp), ФЭУ-2 (photo-electronic multiplier).

The loudspeaker consists of two heads mounted in a grid-case. The sound coils of both heads are series-connected.

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The frequency range of the loudspeaker extends from 100 to 6,000 cycles.

Overall dimensions of Amplifier (packed in carrying case)	295 × 410 × 560 mm
Weight of Amplifier (packed in carrying case)	25 kg
Overall dimensions of loudspeaker (packed in carrying case)	245 × 460 × 550 mm
Weight of loudspeaker (packed in carrying case)	21 kg

КАТ-14 Auto-transformer. The Auto-transformer permits adjustment of voltage variations of supply mains ranging from 65 to 130 V for 127 V mains, and from 165 to 230 V for 220 V mains.

The Auto-transformer is equipped with a voltmeter for control of voltage at the output terminals.

Power of Auto-transformer	750 W
Overall dimensions of Auto-transformer	155 × 285 × 390 mm
Weight of Auto-transformer	13 kg

ЭПП-2 Screen. Light and portable, the ЭПП-2 suspension 2,600×1,900 mm screen is most convenient for motion picture showings with the "Ukraina" Projector. The efficient screen surface is coated with a diffusing and reflecting barite layer which ensures a reflection factor of 0.7 to 0.75.

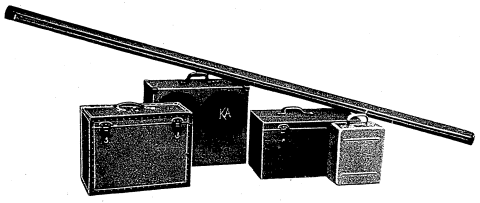

Fig. 74. Sound-on-Film Projector "Ukraina", packed in cases

Light in weight and simple in design the Screen can be quickly hung up for showings and as quickly taken down.

Overall dimensions of Screen (packed in jacket)	100 × 100 × 2,700 mm
Weight of Screen	14 kg

A view of the complete "Ukraina" Sound-on-Film Projector set packed in carrying cases is shown in Fig. 74.

Total weight of the "Ukraina" Sound-on-Film Projector ... 99 kg.

КПС-М 35-mm PORTABLE SOUND-ON-FILM PROJECTOR

The improved Portable КПС-М Sound-on-Film Projector (Fig. 75) is designed for demonstrating 35-mm black-and-white and colour films.

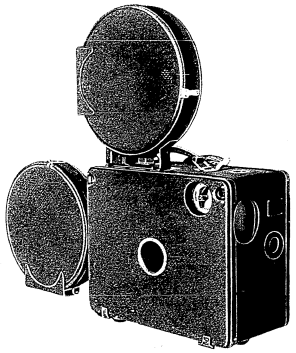

Fig. 75. КПС-М Sound-on-Film Projector

Reliability of the Projector design has been tested by operation in conditions of prolonged travel. This and splendid visual and sound projection plus ease in handling all mechanisms places the projector among the best in its class (Fig. 76 and 77).

A new design of the picture frame correction device has noticeably reduced wear of film and ensures steadiness of screen picture.

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Use of ball bearings and high quality heat-treated material ensure lasting trouble-free operation of the projector.

The Projector is successfully employed in auditoriums with a seating capacity of 200 and is installed directly in the auditorium, eliminating the need of a special projection booth. This and other features make it particularly suitable for use in schools, clubs and village motion picture theatres.

SPECIFICATIONS

Power supply — from 110 or 220 V 50 cycle A. C. mains. Voltage variations in the mains are controlled by a special auto-transformer.

The Projector is supplied with two powerful specially-coated projection lenses with 52.5-mm diameter, relative apertures of 1 : 1.9 and 1 : 2.1, and focal lengths of 90 mm and 120 mm respectively.

Efficient illuminating power of Projector . . . . . 250 to 300 lumens

Light source . . . . . 400 W, 30 V (type K-22) projection lamp

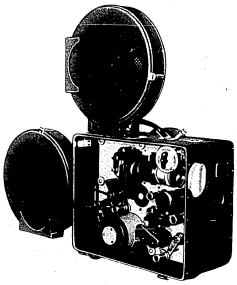

Fig. 76. КПС-М Sound-on-Film Projector, right-side view with cover removed

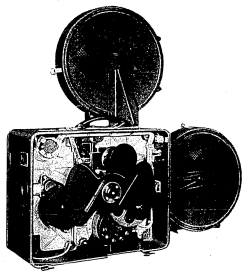

Fig. 77. КПС-М Sound-on-Film Projector, left-side view with cover removed

A 3 W, 4 V exciter lamp for scanning the sound track has a prefocussing socket which ensures perfect alignment of incandescent filament and sound track without adjustment when replacing lamp.

The exciter lamp is power-supplied from D. C. line.

Illuminating lamp of Projector — 8 W, 110 V.

The single-stage antimony-cesium photo-electronic multiplier of the ФЭУ-1 type used in the Projector possesses great sensitivity, uniformity of characteristics, a low noise level and outstanding spectral characteristics, which ensure splendid sound reproduction of colour film sound tracks.

Power drive — single-phase, asynchronous, 50 W, 1,425 r. p. m. motor of ДО-50 type.

Deviations in vertical steadiness of image in picture frame gate — not exceeding 0.04 mm, in horizontal steadiness — not exceeding 0.02 mm.

Magazines have film capacity of 300 metres.

Tripod, film rewinding device, tools and necessary spare parts are supplied with the КПС-М projector.

The КПС-М projector is supplied with either a 4-КУ-12 amplifying unit with loudspeakers (Fig. 78), or КПУ-50 amplifying unit with loudspeaker (See fig. 72).

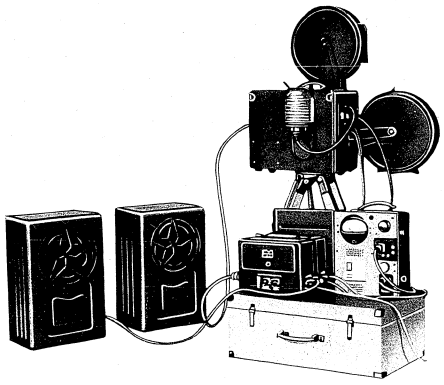

Fig. 78. КПС-М Sound-on-Film Projector, complete set

Nominal output volume of amplifiers 10 W

Peak output volume . . . . . 15 W

Reproduced range of frequencies . . 80 to 6,000 cycles

Amplifiers 4-КУ-12 and КПУ-50 are supplied with the following electronic tubes and auxiliary lamps: 6-Ж-7, 6Н9м, 6П3, (2 pcs.), 5Ц4С, МН3 (neon indicator), МН-15 (6.3 V, 0.28 A incandescent lamp for КПУ-50 amplifier only).

The amplifiers have a selenium rectifier which supplies power to the Projector's 4 V, 3 W, D. C. exciter lamp.

The amplifiers enable playing of gramophone records with the aid of pick-up.

Power consumption of projector — approx. 660 W.

Amplifiers, connecting cables and accessories are provided with carrying cases for storage and transportation convenience.

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OVERALL DIMENSIONS AND WEIGHTS OF PROJECTOR SET:

Projector with cover (220 × 415 × 420 mm)	27 kg
Auto-transformer with cover (155 × 390 × 285 mm)	13 kg
Case with accessories (260 × 460 × 625 mm)	23 kg
Tripod (folded) (220×220×1,300 mm)	5 kg
Case with loudspeaker (4-КУ-12) (250 × 340 × 540 mm)	21 kg
Case with loudspeaker and amplifier (4-КУ-12) (250 × 340 ×540 mm)	27.5 kg
Case with amplifier (КПУ-50) (295 × 410 × 560 mm)	25 kg
Case with loudspeakers (КПУ-50) (245 × 460 × 550 mm)	21 kg

The Sound-on-Film Projector КПС-М is shown packed in carrying cases (amplifier excluded) in Fig. 79.

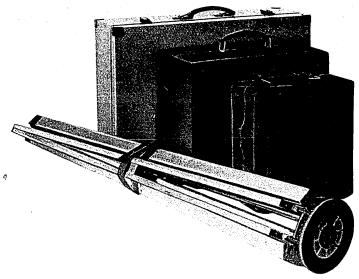

Fig. 79. КПС-М Sound-on-Film Projector, packed in carrying cases

КПТ-1 35-mm STATIONARY SOUND-ON-FILM PROJECTOR

The modern sound-on-film projector must produce bright and sharp images and provide clear and undistorted sound.

The КПТ-1 Stationary Sound-on-Film Projector (Fig. 80) meets these requirements in full. It is intended for visual and

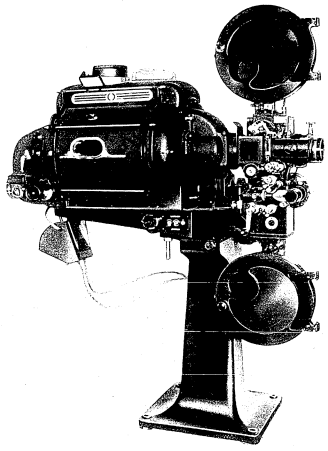

Fig. 80. КПТ-1 Sound-on-Film Projector

sound projection from 35-mm film with standard sound track.

By special order the Projector may be supplied with КУСУ-52, КЗВТ-3 sound reproducing devises.

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Fig. 81 shows projector head, and Fig. 82 — its kinematic diagram.

The projector possesses the following advantages:

High standard visual projection. The specially-coated projection lens produces pictures uniformly sharp in screen centre as well as screen edge.

Uniform illumination of screen is ensured by a special sphero-elliptical mirror fitted in the arc lamp.

The powerful arc lamp with high-intensity carbons provides a light flood through film gate (shutter open; without film) sufficient to illuminate a screen area of 30 sq. metres at approx. 100-lux illumination.

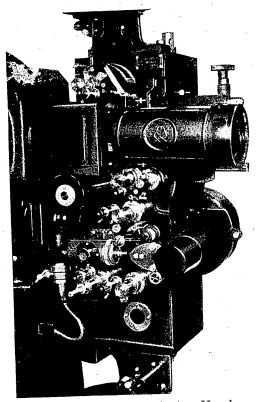

Fig. 81. KIIT-1 Projector Head

Use of automatic carbon feed in the arc lamp eliminates any perceptible flickering in screen illumination.

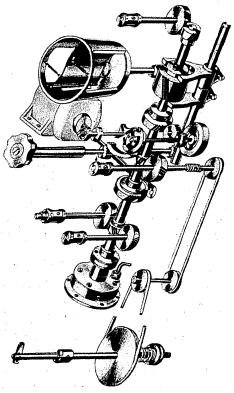

Fig. 82. KIIT-1 Projector Head, kinematic diagram

Perfect steadiness of screen picture is ensured by a long film channel with lateral registration and a rigid film aperture frame.

Warping of the film in the film aperture is prevented by a heat-protection filter installed in the film channel.

High Fidelity Sound. Adequate sound optics provide sufficient brightness to the sound slit.

An oil stabilizer ensures perfect uniformity of film speed past the sound slit.

Greater Film Protection. While travelling through the Projector the film is not subjected to undue strain.

A heat protection filter placed in the path of the light beam in the film channel and a cylindrical shutter between filter and channel prevent excessive heating of the film.

Fire protection is ensured by automatic fire shutters in shutter box and film channel during breakdowns.

Ease of Operation. Precise alignment of picture frame and film aperture during film threading is made easy by an 8 W, 110 V pilot lamp. A second pilot lamp, which is automatically switched on when the lamphouse gate is open, facilitates maintenance of arc lamp.

Carbons are fed automatically. Maintenance of the arc lamp is also facilitated by projection of the positive carbon crater image on the lamphouse screen.

A wide range of feeds and feed ratios of positive and negative carbons, and independent and simultaneous adjustment of carbons by hand permit use of various types of high-intensity and plain carbons.

Fire channels can be opened to clean out the carbon deposits.

Cleaning of film channel is facilitated by the easily detachable aperture framing.

On the side of the operator the space between lamphouse and lens is closed off by the shutter box and lensmount shutter.

All projector and arc lamp controls are conveniently located and provide ease of operation.

Long Service. Automatic lubrication of the Projector Head mechanism is effected by circulating oil.

The Projector Head mechanism is hooded.

Complete Fire Safety. Fire safety is achieved by:

a) fireproof magazines with fireproof channels;

b) automatic safety shutter in film channel which works when film breakes in path between film channel and drum of the maltese cross mechanism;

c) governor controlled automatic safety shutter in shutter box;

d) heat protection filter which eliminates infra-red spectrum portion of the light beam.

SPECIFICATIONS

The KIIT-1 Projector is adapted for use in club and theatre auditoriums with seating capacity of 2,000.

Operated on high-intensity carbons with an axis brilliancy of 56,000 stilb, the Projector has an illuminating power of 3,000 lumens.

The film run is not enclosed.

The film guides in the film channel are replaceable. Lateral film vibration is limited by cushioning spring insert. Dimensions of film aperture are 20.9 × 15.2 mm.

Cooling of the light beam falling on the film aperture of the film channel is achieved by a heat protection filter cooled by the shutter. Light transmission factor of filter — 84 %.

Intermittent movement of the film is produced by a maltese cross mechanism.

Perfect central registration of picture frame and aperture is assured.

The shutter has cylindrical shape. Shutter light efficiency factor is approximately 0.5.

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The sound reproducing system is equipped with a smooth-surface drum with oil speed stabilizer.

Exciter lamp — 50 W, 10 V.

Dimensions of sound slit — 2.15 × 0.02 mm.

Photoelectronic multiplier — type ФЭУ-1.

Type П-4 projection lens has relative aperture of 1 : 2. Focal lengths — 9, 10, 11, 12, 13, 14, 15, 16, 18 cm. (Projector is supplied with one of the lenses at purchaser's choice). Lenses are of specially-coated type. Their light transmition factor is 85—88 %.

Power drive for Projector's mechanism is provided by three-phase asynchronous 0.25 kW, 1,400 r. p. m., 127/220 V, 50 cycle electric motor of И type.

Automatic lubrication of Projector Head mechanism is achieved by geared oil pump.

Automatic rewinding is of the dry friction type.

Projection light source — an arc lamp of the mirror type. The sphero-elliptical mirror has a 360-mm diameter.

High-intensity carbons: the positive carbon with 8-mm diameter, negative carbon with 7-mm diameter.

Operation of lamp is achieved by direct current not exceeding 65 amps., voltage at terminals of lamp — 36—40 V.

The carbons are fed automatically. The positive and negative carbon feed ratio ranges from 1 : 6 to 1 : 1.

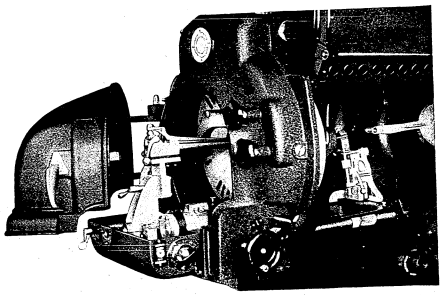

Fig. 83. КПТ-1 Projector Arc Lamphouse

Carbon feed mechanism is driven by 36—40 V, approx. 15 W D. C. motor. Speed range of motor, controlled by rheostat, is from 3,000 to 2,000 r. p. m. Motor switches on automatically by means of relay on striking the arc.

The carbon holders are solid cast. The positive carbon holder is adjustable for carbons of various diameters. The position of the negative carbon head is also adjustable. Correct building-up of arc is ensured by energized magnetic arc control. Additional two-way shifting of the negative carbon holder allows for handling of abnormal crater formation.

The lamphouse (Fig. 83) has double lateral doors which slide up when the lamphouse opens.

Kinematic diagram of the arc lamp is given in Fig. 84.
A baffle is provided to control ventilation in the hot-air exit pipe.

The glowing carbon tips are projected by means of an optical system on a screen fitted in the upper part of the lamphouse. This affords visual control of the arc gap.

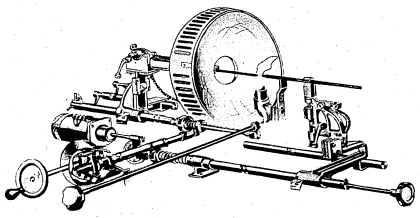

Fig. 84. КПТ-1 Projector Arc Lamp, kinematic diagram

The lamphouse pilot lamp operates on 100 or 220 V current and has an E-27 socket.

Upward and downward tilting range of the Projector optical axis is 6° and 17° respectively.

Capacity of reels . . . . . up to 400 metres of film

Overall dimensions of Projector . . . 640 × 1,300 × 1,880 mm

Height of optical axis from floor level . . . . . 1,250 mm

Weight of Projector . . . . . 300 kg

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K3BT-3 SOUND-REPRODUCING AMPLIFYING DEVICE

The new model of the K3BT-3 Sound-reproducing Amplifying Device reproduces sound records from 35-mm film and is adapted for work with pick-up.

The amplifying device is designed for large motion picture auditoriums with 1500 seats.

The two-band Sound-reproducing Device ensures faithful reproduction.

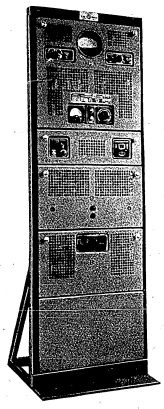

Fig. 85. 50У-4 Amplifier

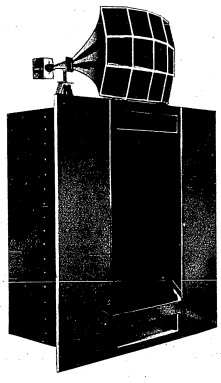

Fig. 86. 30A-9 Loudspeaker

The two-band amplifying system divides the sound frequency band into high-frequency and low-frequency circuits at the input and achieves subsequent amplifying of the signals in two narrow strip bands whose output is directly connected with high- and low-frequency two-way loudspeakers.

The outstanding features of the device are: practically no distortion, high output volume, low level of interference, uniform distribution of sound over entire auditorium, and highly reliable performance.

The Sound-reproducing Device consists of the following units:

two 50У-4 amplifiers (racks), (Fig. 85); one of these is a spare unit;

two 30A-9 two-way loudspeakers (Fig. 86);

three 80У-3 photo stages fitted on projectors;

a 25A-3 monitor loudspeaker (Fig. 87);

two 6K-78 volume control resistors.

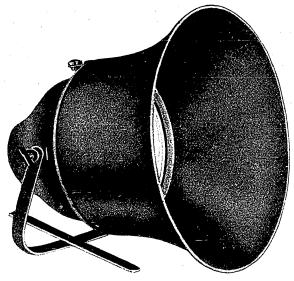

Fig. 87. 25A-3 Monitor Loudspeaker

SPECIFICATIONS

Nominal output volume of amplifier — 40 W.

Reproduced frequency range — from 40 to 10,000 cycles.

Within this range the nonlinear distortion factor does not exceed 2 %.

Power supply — from 50 cycle A.C. mains with 127 or 220 rated voltage. Range of voltage regulation is from 85 to 135 V and from 170 to 220 V respectively. Connection of device to line is single-phased.

Power supply of the exciter lamp is by rectified and well flattened current. Power of exciter lamp — 50 W, 10 V.

The device operates with three stationary КПТ-1 Sound-on-Film Projectors, of which two are operated and one is a spare unit.

Correction of high and low frequencies within operating range is possible.

Supply voltage of the photoelectronic multiplier — 230 V $\pm$ 10 %.

Resistance of volume control — 10,000 ohms $\pm$ 10 %.

Types of tubes and lamps used:

in amplifier — 6Ж7 (12 pcs.), 6Н8С (6 pcs.), 6П3 (4 pcs.), Г-807 (16 pcs.), 5Ц4С (6 pcs.), 5Ц3С (4 pcs.), ВГ-176 (4 pcs.), МН-7 (4 pcs), МН-3 (4 pcs.), incandescent lamps 6.3 V, 0.28 A (4 pcs.);

in photo-cell stage — 6Ж7 (3 pcs.);

in volume control panel — 5 W, 110 V, incandescent illumination lamp.

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The loudspeaker units are adapted to Separately reproduce high and low portions of the operating frequency range.

The loudspeaker set includes two speaker units:

a) low frequency unit, consisting of electrodynamic head of low-frequency speaker (2pcs.), low frequency horn and directional baffles (right and left);

b) high frequency unit, consisting of electrodynamic head of high frequency speaker (2 pcs.), and high-frequency multicellular horn.

Rated output power of set . . . . . 20 W

Frequency of division . . . . . 550 $\pm$ 50 cycles

Average response of set . . . . . not lower than 35 units

Directional characteristic variations do not exceed 5 db at 8,000 cycles frequency within a horizontal 80° angle and a vertical 50° angle.

Divergence of response does not exceed $\pm$ 6 db.

КУСУ-52 SOUND-REPRODUCING AMPLIFYING DEVICE

The Stationary Sound-reproducing Amplifying Device КУСУ-52 is designed to reproduce sound tracks of 35-mm film and is adapted for work with pick-up.

The amplifying unit is adapted for operation in motion picture theatres and club halls with a seating capacity of 800.

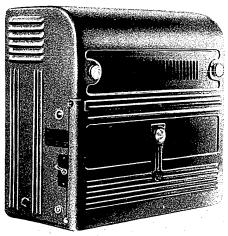

Fig. 88. 70У-5 Amplifier

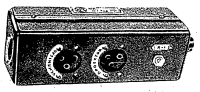

Fig. 89. 10К-4 Junction Box

The Device includes the following units:

70У-5 Amplifier (Fig. 88) with hose and 10К-4 junction box (Fig. 89);

22В-3 Rectifier (Fig. 90);

10В-1 Rectifier (Fig. 91);

6К-16 Volume Control Panel (Fig. 92);

6У-12 Dividing Filter;

25А-3 Monitor Loudspeaker (Fig. 93);

30А-3 Two-way Loudspeaker (Fig. 94).

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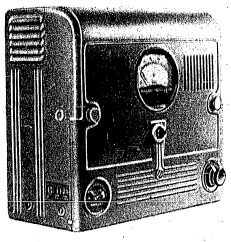

Fig. 90. 22B-3 Rectifier

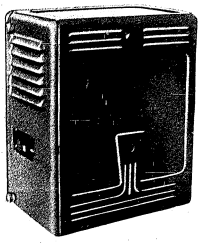

Fig. 91. 10B-1 Rectifier

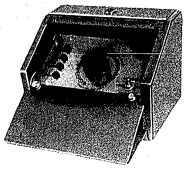

Fig. 92. 6K-16 Volume Control Panel

Fig. 93. 25A-3 Monitor Loudspeaker

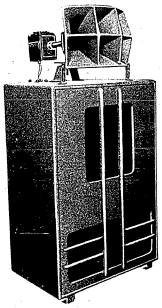

Fig. 94. 30A-3 Two-way Loudspeaker

SPECIFICATIONS

Output volume of amplifier — 40 W.

Band of reproduced frequencies ranges from 60 to 8,000 cycles.

Nonlinear distortion factor when operating at rated volume does not exceed 2.5% in the 70—5,000 cycles frequency band.

Power supply — from A. C. single-phase 50 cycles mains of 127 or 220 voltage.

Regulation of the voltage supply is achieved by the 22B-3 Rectifier, which maintains normal operation of the device when voltage in mains falls from 127 to 85 V, or in 220 V mains to 170 V.

The exciter lamp is supplied with rectified and well flattened current. Exciter lamp — 10 V, 50 W.

The device is designed for use with two projectors; two devices may be used with three projectors of the stationary КПТ-1 type and the ФЭУ-1 photoelectronic multipliers.

An easy switch-over is ensured to the spare amplifying unit, and a spare КПТ-1 projector by the wiring scheme.

High and low frequency correction is provided within operating frequency range.

The 30A-3 Two-way Loudspeaker can reproduce high and low frequencies separately and represents a combination of two specific loudspeakers — of high frequency and low frequency response. Division of the operating frequency band is achieved by the 6У-12 Filter, inserted between the 70У-5 Amplifier and 30A-3 Loudspeaker.

Loudspeaker's maximum excitation power (at 25 V excitation voltage) is 65 W.

Photoelectronic multiplier power supply voltage — 230 V ± 10%.

Resistance of volume control — 30,000 ohms.

The following types of tubes and lamps are used:

in 70У-5 Amplifier — 6Ж7 (2 pcs.), 6Н7 (2 pcs.), Г-807 (4 pcs.), 5Ц4С (2 pcs.), МН-3 neon tube;

in 22B-Rectifier — ВГ-176, 6.3 V, 0.25 A tube;

in 6K-16 Volume Control Panel — 8—15 W, 110 V panel illuminating lamp.

Specifications of Two-way Loudspeaker:

Rated volume of output	20 W
Division frequency	850 cycles
Deviation of frequency characteristics within operating frequency range	not exceed ± 8 db.
Average irrelative response of Loudspeaker	not less than 22 units

Directional characteristics of Loudspeaker lie within an angle of ± 40° with response divergencies not exceeding 6 db. in the frequency band up to 6,000 cycles.

Overall dimensions of the Device:

70У-5 Amplifier	418 × 398 × 200 mm
22B-3 Rectifier	418 × 398 × 200 mm
10B-1 Rectifier	232 × 280 × 130 mm
6У-12 Dividing Filter	214 × 158 × 158 mm
6K-16 Volume Control Panel	214 × 158 × 158 mm
30A-3 Two-way Loudspeaker	730 × 1,600 × 700 mm
Weight of sound-reproducing device	187 kg

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PY-65 SWITCHING RACK

The PY-65 Switching Rack (Fig. 95) is used in motion picture theatres and is designed for switching, protection and wiring of power and acoustic power supply lines of units (in projection booth and auditorium).

The design provides easy access to the terminal board, fuses and contactors.

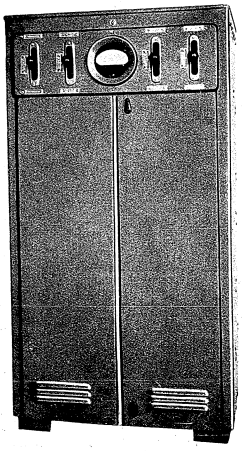

Fig. 95. PY-65 Switching Rack

A TC-5 Light Dimmer is installed in the top part of the Switching Rack structure.

The Switching Rack provides for an independent supply of power and light from two separate inputs: "power input" and "illumination input".

The Switching Rack has switching of supply circuits for projector arcs and allows switching of an operating projector arc from one supply circuit to another.

The control panel with a voltmeter is located on the front panel of the Switching Rack at a height convenient for operation.

The electric wiring diagram provides:

power input switch;

three throw-over switches for three-phase on-and-off switching of the auditorium illumination circuit;

interconnecting means of two rectifiers and three projectors;

means of quick connection of any of two operating rectifiers to the third spare projector;

possibility to substitute the third (spare) BC-60A rectifier for any of the two operating rectifiers by means of a terminal board switch;

contactors to switch the rectifiers to the power supply circuit, the contactors being controlled from the projectors;

fuses.

SPECIFICATIONS

The Switching Rack is designed to switch 220/380 V, 50 cycle A. C. line circuits.

Normal operation is maintained with voltage variations of + 10 % and — 20 %.

Overall dimensions of Switching Rack . . . . . 1,450 × 740 × 440 mm
Weight of Switching Rack . . . . . 150 kg

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KAT-14 AUTO-TRANSFORMER

The KAT-14 Auto-Transformer (Fig. 96) is designed for portable 16- and 35-mm sound-on-film projectors equipped with 400 W, 30 V projection lamps, the power supply coming from a single-phase 127-220 V, 50 cycle, A. C. line.

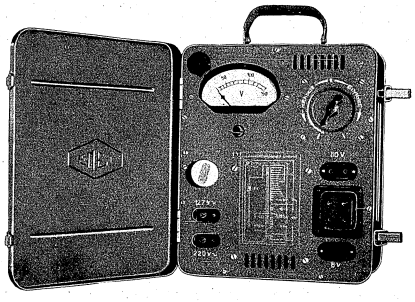

Fig. 96. KAT-14 Auto-Transformer

The Auto-Transformer's voltage is adjusted by means of a rotary switch without interrupting the electric circuit. The Auto-Transformer is supplied with voltmeter.

Protection from short-circuit is achieved by a fuse.

Switch, voltmeter, fuse and receptacles for connecting cables are mounted on the Auto-Transformer panel and have a hood to protect them from mechanical injuries during transportation.

The Auto-Transformer is adapted for use in various branches of industry for maintenance of constant voltage values of 110 V, 30 V and 5 V.

SPECIFICATIONS

Rated power	750 W
Rated output voltages	110 V, 30 V, and 5 V ± 2.5 %
Ranges of voltage variations:	
for 127 V mains	from 65 to 130 V
for 220 V mains	from 165 to 230 V
Rate of voltage adjustment registered by voltmeter	12 steps of 5—7 V each
Maximum overheating of winding	65° C
Overall dimensions of Auto-Transformer	390 × 285 × 155 mm
Weight of Auto-Transformer	13 kg

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ТРД-50 REACTIVE ARC TRANSFORMER

The ТРД-50 Reactive Arc Transformer (Fig. 97) supplies motion picture projector arcs with stabilized alternating current.

The Reactive Transformer cuts power consumption to half compared to consumption through a ballast (active) resistance.

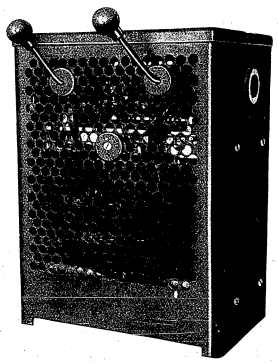

Fig. 97. ТРД-50 Reactive Arc Transformer

The Transformer is provided with a steel housing. To ensure cooling of Transformer the housing is perforated and its bottom is open.

Connection of arc lamp to line circuit is achieved through two single-pole arc current regulation switches and terminals which

are mounted on a panel on top of the Transformer. The panel is protected by the housing cover.

The circuit diagram of the Transformer is shown in Fig. 98; external characteristics in Fig. 99.

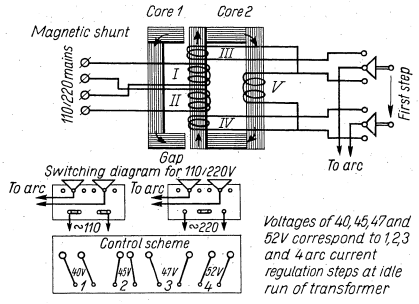

Fig. 98. ТРД-50 Transformer Circuit Diagram

The switches regulating arc current have four steps. Apertures for the leads from "line" and "to arc" are provided in the side walls of the housing.

The Transformer is easily mounted on the projector base.

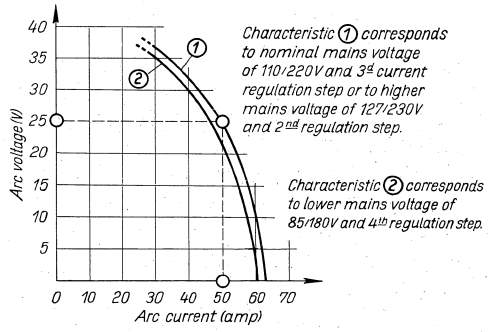

Fig. 99. ТРД-50 External Characteristics of Transformer

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SPECIFICATIONS

Power supply line of transformer

Rated voltage	110/220 V
Frequency	50 cycles
Phases	1
Efficiency	0.8
Power factor	0.5
Tolerated variations in supply voltage:	
110 V line	from 85 to 127 V
220 V line	from 180 to 230 V

Power supply line of arc

Rated arc voltage	20—30 V
Rated arc current	50 A
Rated load	1,500 W
Stability of arc current at variations of arc voltage from 20 to 30 V	50 ± 5 A
Tolerated range of arc current regulation	from 40 to 55 A

Other data

Operating cycle	20-minute interval after 25-minute operation time
Dimensions of transformer (without switch handles)	430 × 320 × 230 mm
Overall dimensions of transformer (with switch handles)	450 × 320 × 285 mm
Weight of transformer	45 kg

ЭПП PORTABLE DIFFUSE REFLECTION SCREEN

The portable hang-up screen (Fig. 100) is best suited for film showings indoors (club auditoriums, special demonstrating rooms, etc.).

The screen is hung up on the wall or on other support by rope rings at any desired height from floor level.

The screen is easily and quickly mounted before showing. It is light in weight and simple in design.

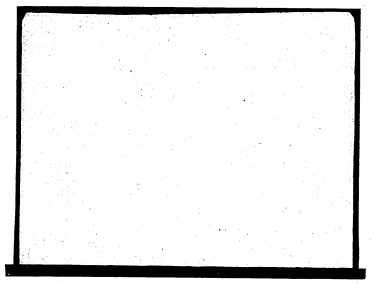

Fig. 100. ЭПП Portable Diffuse Reflection Screen

A special mechanism performs unwinding and rolling up of screen.

The screen is made of seamless linen fabric coated with special light-reflecting layer.

The screen is provided with a jacket for convenient transportation and storage.

SPECIFICATIONS

The portable screen is made available in two models:

ЭПП-1 with efficient surface	2,000 × 1,500 mm
ЭПП-2 with efficient surface	2,600 × 1,900 mm
Screen reflection factor	0.7—0.75

Overall dimensions and weight of the folded screen:

	ЭПП-1	ЭПП-2
Length	2,100 mm	2,700 mm
Diameter	90 mm	100 mm
Weight	9 kg	14 kg

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TC-5 LIGHT DIMMER

The TC-5 Light Dimmer (Fig. 101) produces smooth dimming and gradual lighting of auditorium.

The Dimmer is an electromagnetic device of static action. All parts of the Dimmer are stationary and not subjected to wear. This outstanding feature places it above all other types of dimmers.

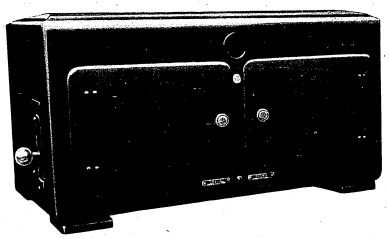

Fig. 101. TC-5 Light Dimmer

Dimming and lighting is achieved automatically on turning a switch handle.

The Dimmer is made available in two models:

a) for connection to three-phase 127 or 220 V 50 cycle line;

b) for connection to three-phase 220 or 380 V 50 cycle line.

SPECIFICATIONS

Rated load . . . . . 5 kW
Minimum load . . . . . 2 kW

Normal operation of the Dimmer is maintained at uneven inter-phase load distribution ranging up to 10 % and at line voltage variations within limits of — 20 % and + 5 % of its rated value.

Lamp voltage drops from 80 to 20 % of its rated value during dimming process. The process takes 25—45 sec. Lamp voltage rises from 20 to 80 % of its rated value to accomplish lighting process in no more than 25 sec.

The Dimmer is designed for mounting in top part of PY-65 Switch Rack or independent installation on bracket or table. Cooling is effected by surrounding air. Air temperature must not exceed 35° C and relative air moisture must be not over 70 %.

Overall dimensions of Dimmer . . . 760 × 400 × 430 mm
Weight of Dimmer . . . . . 150 kg

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АЗС-9-10 AUTOMATIC FIRE SHUTTERS

The АЗС-9-10 Automatic Fire Shutters are designed for installation in projection booth to shut off projection aperture and projection booth windows automatically during fire emergency within booth. The booth is thereby isolated from auditorium and flame and smoke are prevented from reaching the auditorium. A fire alarm and emergency lighting are switched simultaneously.

The Automatic Fire Shutter set (Fig. 102) includes equipment for two projectors:

Two automatic shutters with special protective glass for projection apertures, type АЗС-9;

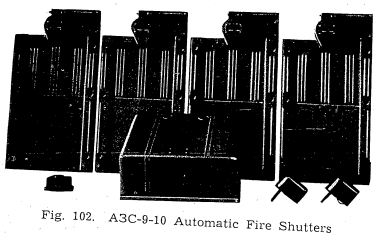

Fig. 102. АЗС-9-10 Automatic Fire Shutters

Two automatic shutters with special protective glass for projection booth windows type АЗС-10, and push-button switch;

Two automatic АВ3-3 switches.

The automatic switch is fitted in the projector near the film channel and if film ignites, it achieves automatic disconnection of the power supply line of electromagnets working four automatic shutters.

The ЭПУ-1 power supply device feeds circuits of the automatic shutter electromagnets with rectified current and achieves switching of emergency lighting and fire alarm.

The ЭПУ-1 power supply device has a handle for manual switching of the emergency lighting and is provided with pilot lamps.

The B-16 push-button switch is fitted at exit of booth and serves for manual switching off of supply to electromagnets of the Automatic Shutters if fire breaks out.

SPECIFICATIONS

Power supply — from single-phase 110, 120 or 220 V, 50 cycles A. C. line.

Normal operation of the device is maintained with variations of line voltage ranging from — 20 % to + 10 %.

The device is designed for permanent connection to line. Surrounding air temperature must not exceed + 35° and relative air moisture not over than 75 %.

The design of the device's separate elements allows for combined operation of one, two or three projectors, effected by automatic shutters.

The power supply device is designed to feed the emergency lighting circuit up to 500 W lamp power.

The rectifier consists of BC-45-70 selenium bridge and TP-220 transformer. It is designed to supply electromagnets of 6 automatic shutters.

Dimensions of the shutter aperture — 150 × 150 mm.

The АЗС-9 Automatic Shutter glasses are of the specular type with 85 % transparency.

Overall dimensions of the Automatic Shutter:

АЗС-9 . . . . . 480 × 240 × 50 mm

АЗС-10 . . . . . 480 × 240 × 130 mm

Weight of set of Automatic Shutters approx. 25 kg

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ЛЗ-2 AUTOMATIC SCREEN CURTAIN WINCH

The ЛЗ-2 Automatic Winch effects opening and closing of the screen curtain used for dual purpose of decorating screen and protecting it against dust and dirt.

SPECIFICATIONS

Range of regulating curtain opening — from 1 to 10 metres.

Speed of curtain's travel — 0.2 metres per sec.

An electromechanical control device effects remote operation of the winch from one or several locations.

The starting device consists of magnetic starters with push-button controls.

Power of electric motor is 0.52 kW.

Power supply — from 220 or 380 V A. C. mains.

A hand drive is provided to adjust and check operation of the winch mechanism.

Overall dimensions of the winch . . 600 × 500 × 308 mm

ФС-5 FILM STORAGE CONTAINER

The ФС-5 Film Storage Container is two-storied and has twelve separate sections provided with lugs for rolling out film reels.

A special film humidifying divice in the Container ensures film preservation.

"KIEV-1" MOBILE POWER PLANT

The "Kiev-1" Mobile Power Plant (Fig. 103) is designed to feed portable projectors of the КПС-М, "Ukraina" or of similar types with single-phase alternating current.

The power plant may also be used to feed the lighting system and instruments if their power consumption does not exceed 750 W.

The power plant has small dimensions and light weight. These features add to its mobility.

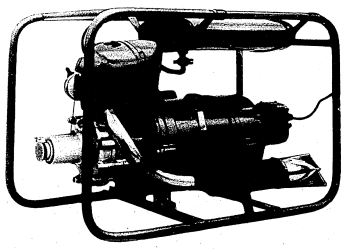

Fig. 103. "Kiev-1" Mobile Power Plant

The power plant consists of a single-phase alternating current generator and a two-stroke cycle internal combustion engine, attached to the generator by a special flange.

A flexible coupling transmits rotary motion from engine to generator. The generator and engine are mounted on a frame-work which protects the plant from damage.

A fuel tank of approx. 5-litre capacity is fitted in the upper part of the framework.

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GENERATOR SPECIFICATIONS

The 9M-3 Generator is a self-exciting single-phase A. C. electric machine, and has the following characteristics:

Voltage	115 V
Current	7 A
Power	750 W
Frequency	50 cycles
Revolutions per min.	3,000

ENGINE SPECIFICATIONS

The engine is single-cylinder, two-stroke cycle, internal gasoline combustion, with two-channel scavenging.

Constancy of speed is maintained by a centrifugal governor set for 3,000 r. p. m., which corresponds to frequency of 50 cycles.

Power (at rated 3,000 r. p. m.)	2 h. p.
Cylinder bore	52 mm
Piston stroke	58 mm
Capacity of cylinder	123 cm^3
Rate of compression	6.5
Fuel	gasoline and oil compound in 1 : 25 ratio
Ignition system	M-24 magneto
Spark plug	M14 × 1.25 type HA 11/10
Carburettor	K-30
Cooling	air-cooled
Overall dimensions of power plant	750 × 400 × 480 mm
Weight of power plant	60 kg

A set of accessories and tools packed in a special box are supplied with the power plant.

КЭС-5 MOBILE POWER PLANT

The КЭС-5 Power Plant (Fig. 104) is designed to supply 35-mm or 16-mm motion picture projectors of КПС-М, "Ukraina" or of similar types with single-phase alternating current.

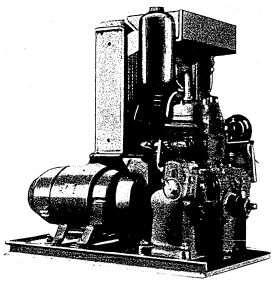

Fig. 104. КЭС-5 Mobile Power Plant

The power plant may also be used to feed the lighting system and instruments if their power consumption does not exceed 750 W.

The power plant contains an internal combustion engine which drives a single-phase alternating current generator by means of flexible coupling.

Engine and generator are mounted on a rigid base frame.

To facilitate transportation the power plant may be mounted on four wheels.

Regulation of voltage of power plant is achieved by a shunt rheostat mounted in the generator panel.

ENGINE SPECIFICATIONS

The JI-3/2 engine is vertical, single-cylinder, four-stroke cycle, gasoline-operated. Centrifugal governor set for 1,500 r. p. m. maintains constancy of speed.

Power (at rated 2,200 r. p. m.)	3 h. p.
Cylinder bore	65 mm
Compression rate	4.5—5.0
Capacity	298 cm^3
Cooling — thermosyphon, capacity of tubular radiator	5 litres
Fuel supply	by gravity
Fuel tank capacity	4.3 litres
Fuel consumption	up to 335 gr per h. p. per hour

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Lubrication	splash type
Lubrication system capacity	1.7 litres
Magneto	type M27Б
Spark plugs	M-12/20 type
Carburettor	K-12 Г type
Overall dimensions of engine	760 × 520 × 510 mm
Weight of engine	81 kg

GENERATOR SPECIFICATIONS

The 9M-1 generator is self-exciting, single-phase A. C. electrical machine.

Voltage	115 V
Current	7 A
Power	750 W
Frequency	50 cycles
Revolutions per minute	1,500
Exciter voltage	32 V
Exciter current	3.8 A
Shunt rheostat resistance	not less than 4.2 ohms
Overall dimensions of generator	480 × 300 × 260 mm
Weight of generator	42 kg
Overall dimensions of power plant	1,200×665×950 mm
Weight of power plant	180 kg

A ballast resistance to maintain load when the projector is being switched off, a connecting cord, special tools, a set of spare parts and other accessories are supplied with the Power Plant.

КЭС-4 MOBILE POWER PLANT

The КЭС-4 Mobile Power Plant (Fig. 105) is designed to supply projector installations with two projectors of the КПС-М, "Ukraina" and of similar types with single-phase alternating current.

The power plant is installed in a special room fitted for operation of internal combustion engine.

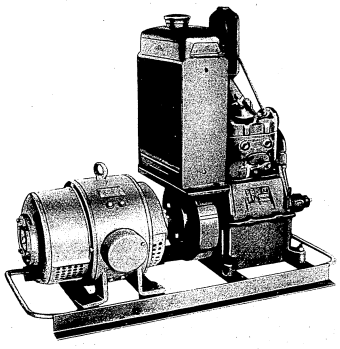

Fig. 105. КЭС-4 Mobile Power Plant

The power plant includes an internal combustion engine which drives a single-phase alternating current generator by flexible coupling. Engine and generator are mounted on a rigid base frame.

The power plant is provided with a switchboard installed in the power plant room, and with switchbox, mounted in proximity of projectors.

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The switchboard has a voltmeter for visual control of power plant voltage, fuses, switches and plug sockets. The switchbox is also provided with fuses, switches and plug sockets.

ENGINE SPECIFICATIONS

The Д6/3 engine is vertical two-cylinder, four-stroke cycle, gasoline-operated type. Constancy of speed is maintained by a centrifugal governor set for 1,500 r. p. m.

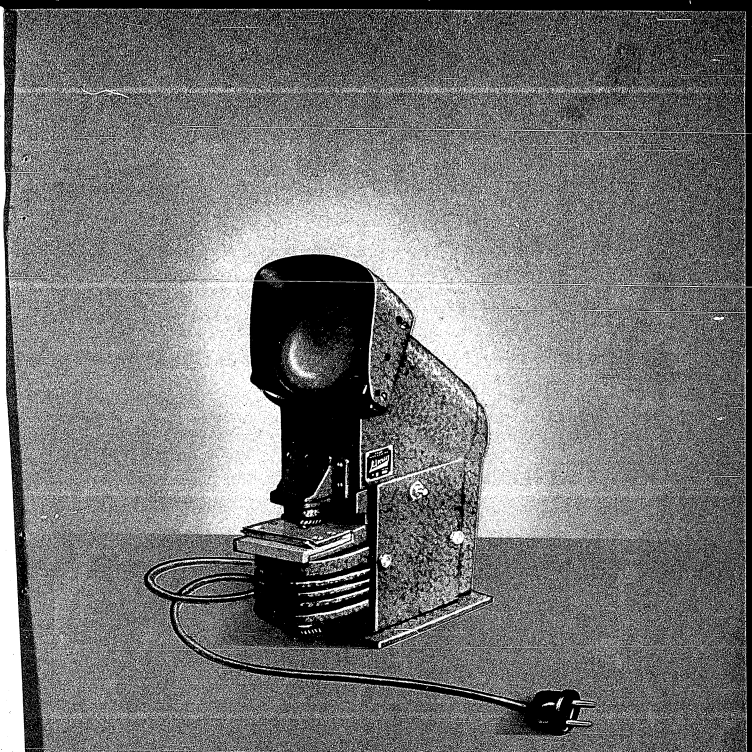
Power (at rated 2,200 r. p. m.)	6 h. p.
Cylinder bore	65 mm
Compression rate	4.5—5.0
Capacity	597 cm³
Cooling — thermosyphon, capacity of tubular radiation	7 litres
Fan	with two blades
Carburettor	type К-12Д
Fuel supply	by gravity
Fuel tank capacity	15—18 litres
Fuel consumption	up to 335 gr per h. p. per hour
Magneto	type ММДС-2
Spark plugs	М 12/20 type
Lubrication	splash lubricator
Overall dimensions of engine	670 × 450 × 800 mm
Weight of engine	100 kg

GENERATOR SPECIFICATIONS

The АПН-28.5 generator is a self-exciting single-phase alternating current electric machine.

Voltage	120 V
Current	15 A
Power	1,800 W
Revolutions per minute	1.500
Frequency	50 cycles
Exciter voltage	54 V
Exciter current	3.6 A
Shunt rheostat resistance	21 ohms + 15 %
Weight of generator	75 kg
Overall dimensions of power plant	1,100×550×900 mm
Weight of power plant	230 kg

The power plant is supplied with ballast resistance to maintain load when shutting off projector, connecting cord, special tools, set of spare parts, fuel tank and other accessories.



MEASURING AND INSPECTION INSTRUMENTS

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16-MM-3 FILM LENGTH COUNTER

The Counter (Fig. 106) registers the length of 16-mm film. It is designed to operate on service benches with vertical rewinding devices with both forward and reverse run of film.

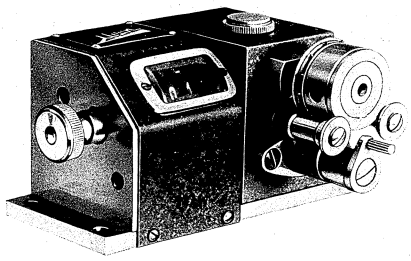

Fig. 106. 16-MM-3 Film Length Counter

A clearly visible dial shows length of film in hundreds, tens, ones and tenths of metres.

During forward run the counter adds the length of film, during reverse run it subtracts.

Overall dimensions of counter . . . . 119 × 106 × 68 mm
Weight of counter . . . . . 1.2 kg

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35-MM-3 FILM LENGTH COUNTER

The Counter (Fig. 107) registers the length of 35-mm film. It is designed to operate on service benches with horizontal rewinding devices with both forward and reverse run of film.

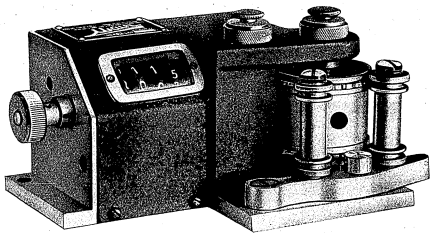

Fig. 107. 35-MM-3 Film Length Counter

The dial shows hundreds, tens, ones and tenths of metres during the forward run. During reverse run length of passing film is subtracted from previously registered length.

Overall dimensions of counter . . . . 137 × 106 × 80 mm
Weight of counter . . . . . 1.5 kg

CO-301-1 FILM INSPECTION MAGNIFIER

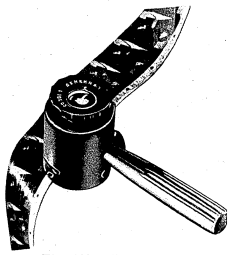

Fig. 108. CO-301-1 Film Inspection Magnifier

The CO-301-1 Film Inspection Magnifier (Fig. 108) is adapted to define the degree of wear of 16 and 35-mm film perforations by alignment with a standard reticule put on the lens surface.

The eye-glass of the magnifier is fitted with a device for focusing a sharp image of the reticule in the ± 2 dioptric range.

The device is of the portable pocket type.

SPECIFICATIONS

Lens magnifying power . . . . . 10 ×
Overall dimensions of Magnifier . 100 × 80 × 35 mm
Weight of Magnifier . . . . . 130 g

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ЛШП-16 PERFORATION PITCH INSPECTION RULE

The ЛШП-16 Rule (Fig. 109) is adapted to measure the average perforation pitch and the average percentage of shrinkage in 21 picture-frame lengths of 16-mm film.

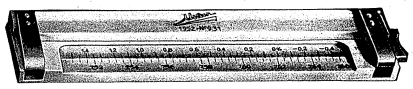

Fig. 109. ЛШП-16 Perforation Pitch Inspection Rule

The design of the Rule enables to define shrinkage ranging from 0.5 to 1.5 % and to inspect films of perforation pitch exceeding 7.62 mm.

Reading: of fixed scale 0.004 mm; of moving scale 0.05 %.

The Rule is of the portable pocket type.

Overall dimensions of Rule . . . . . 150 × 50 × 20 mm
Weight of Rule . . . . . 350 g

ЛШП-35 PERFORATION PITCH INSPECTION RULE

The ЛШП-35 Rule (Fig. 110) is adapted to measure the average perforation pitch and the average percentage of shrinkage in 3—8 picture-frame lengths of 35-mm film.

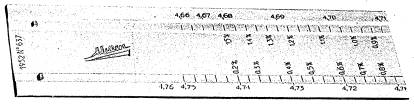

Fig. 110. ЛШП-35 Perforation Pitch Inspection Rule

The Rule is a metal plate with a film bed, pins to secure film, and scale for measuring pitch dimensions and shrinkage percentage.

The instrument is of the portable pocket type.

Overall dimensions of Rule . . . . . 180 × 50 × 3 mm
Weight of Rule . . . . . 50 g

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ПКП-2 PERFORATION INSPECTION PROJECTOR

The Perforation Inspection Projector (Fig. 111) is portable, bench-type, and adapted to define degree of wear in 35-mm film perforation tracks.

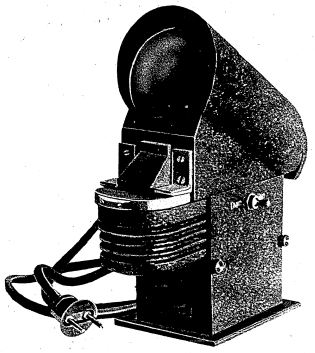

Fig. 111. ПКП-2 Perforation Inspection Projector

The instrument projects the perforation aperture, film edge and sound track on a lens-screen.

A special reticule on the projector screen allows to define the degree of wear.

SPECIFICATIONS

Magnifying power of Projector	7.6 — 8.6 ×
Power supply	127 or 220 V A. C. line
Illumination source	4 V, 3 W lamp
Overall dimensions of Projector	280 × 240 × 100 mm
Weight of Projector	4.5 kg

РИФ-3 SOUND TRACK MEASURING INSTRUMENT

The РИФ-3 bench-type Measuring Instrument (Fig. 112) measures the geometric dimensions of the sound track and its position in relation to film edge.

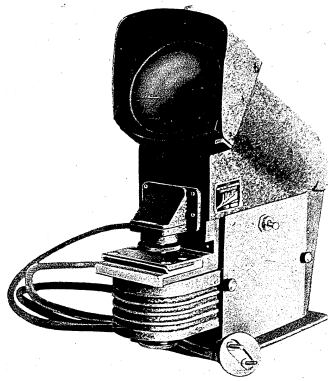

Fig. 112. РИФ-3 Sound Track Measuring Instrument

The instrument is adapted to control:

distance from sound track axis line to film edge;
width of band to be printed;
width of zero mark lines;
width of negative film sound track.

SPECIFICATIONS

Magnifying power of measuring instrument	20 ×
Power supply	127 or 220 V, A. C. line
Light source	4 V, 3 W lamp
Overall dimensions of instrument	300 × 245 × 110 mm
Weight of instrument	5 kg

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ИН-3 INSPECTION KIT

The ИН-3 Inspection Kit (Fig. 113) is designed to facilitate inspection and control of motion picture projection installations, and projection apparatus in repair shops.

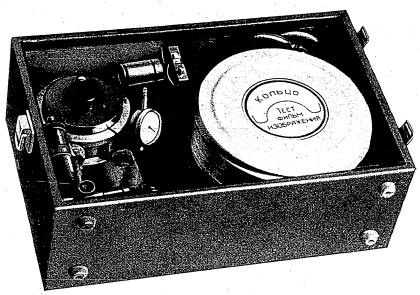

Fig. 113. ИН-3 Inspection Kit

The kit allows for inspection of: the optical light system; radial or end run out of sprockets; axis play; stability of picture frame in the film channel; equalization of screen illumination from two projectors; film tensioning in film channel and film tensioning on take-up frictional device; degree of perforation wear; average perforation pitch; average percentage of film shrinkage; quality of sound and image; dimensions of film channel; position of intermittent sprocket; film gate position.

The complete kit comprises:

a) for 35-mm sound-on-film projectors:
device for installation of optics;
instrument for defining sprocket run out;
gauges for film channel measurements;
masks for light control measurements;
dynamometer for measuring film tensioning in film channel;

dynamometer for measuring film tensioning in take-up frictional device;
sound test-film;
image test-film and film loop of 100 % fitness;
125-mm vernier caliper;
tape or collapsible meter;
magnifier with mount;
electric torch with battery;

b) for inspection of 16 and 35-mm film perforations:
magnifier for perforation inspection;
16-mm film perforation pitch inspection rule;
35-mm film perforation pitch inspection rule.
The kit is provided with carrying case.

Overall dimensions of case . . . . . 400 × 255 × 132 mm
Weight of kit . . . . . 7.5 kg

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ДФЭ-2 PHOTOELECTRICAL DENSITOMETER

The ДФЭ-2 Photoelectrical Densitometer (Fig. 114) measures photographic densities in transmitted light. The instrument includes the following assemblies:

Ferroresonance voltage stabilizer;
optic system with lighting device;
amplifier;
mirror dial galvanometer;
detachable carriage.

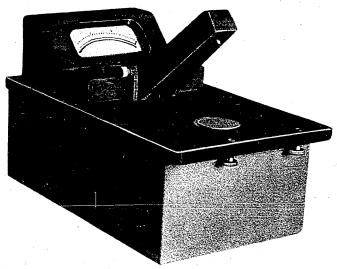

Fig. 114. ДФЭ-2 Photoelectrical Densitometer

The voltage stabilizer provides stability within 1% of the output voltage with line voltage variations ranging from 100 to 130 V.

The scheme of densitometer includes:
СЦВ-3 photoelectric cell;
6Ф5 electronic tube;
6 V, 15 W exciter lamp.

Measurements are facilitated by the detachable carriage construction. One measurement may be made within 2—3 sec.

The Densitometer makes possible special measurements of light intensity.

Easy access to parts of Densitometer is provided by removable lid of the instrument box.

SPECIFICATIONS

Power supply — from 120 V, 50 cycle A. C. line.

Reading of optical density values is achieved by means of galvanometer pointer deflections.

Galvanometer scale enables direct reading of optical diffusion density.

Optical density measurements from zero to 3.0 are made with an accuracy of:

$\pm$ 0.01 with 0.0 to 1.0 density values;
$\pm$ 0.02 with 1.0 to 2.0 density values;
$\pm$ 0.03 with 2.0 to 3.0 density values.

Overall dimensions of Densitometer . . . . . 570 × 320 × 360 mm
Weight of Densitometer . . . . . 28 kg

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ЭПП-4 UNIVERSAL EXPOSURE METER

The ЭПП-4 Exposure Meter (Fig. 115) is designed to determine exposure time when filming black-and-white and colour film, or photographing with day or artificial light.

Fig. 115. ЭПП-4 Universal Exposure Meter

The instrument is portable, pocket-type, supplied with special handy carrying case.

The instrument consists of the following parts:

disk-shaped selenium photoelectric cell; iris diaphragm for adjusting magnitude of the light beam; two attachments: for light measurements and measurements of average and high brilliancies respectively; metering instrument with arrangement for locking of the pointer in the deflected position; calculator with three scales bearing values of exposure-determining factors.

The Exposure Meter consists of two parts — upper and lower, connected with each other by an axis which allows the upper part to move up to an angle of 300° in relation to the lower part.

SPECIFICATIONS

Range of illumination measurings	25—100,000 lux
Range of brilliancy	30—100,000 apostilb
Viewing angle during screen illumination measurings	170°
Viewing angle when measuring high and average brilliancy by use of attachment	50°
Measuring instrument	micro-ampmeter of 1.5—10^{-6} response per mm of scale division and 650 ohm frame resistance
Overall dimensions of Exposure Meter	125 × 60 × 35 mm
Weight of Exposure Meter	300 g

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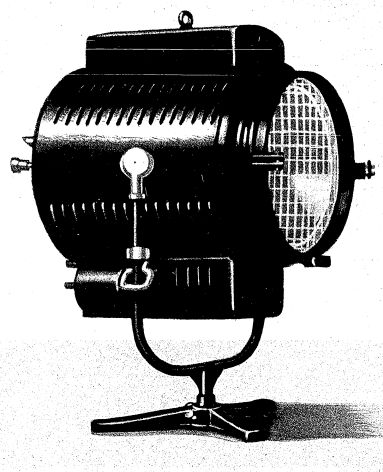

LIGHTING APPARATUS

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ПР-60 APPARATUS FOR DIFFUSED LIGHT ILLUMINATION

The ПР-60 Apparatus (Fig. 116) provides diffused light illumination for normal or newsreel filming.

The apparatus is used to illuminate backgrounds, large groups in foregrounds, sets and actors in action.

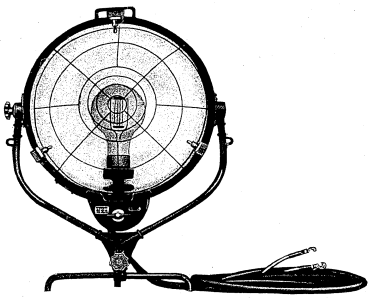

Fig. 116. ПР-60 Apparatus for Diffused Light Illumination

The apparatus is portable, safe in operation, simple in design and is used effectively in studio and outdoor sets.

The apparatus is fitted on a tripod or suspended by special attachments.

The apparatus is equipped with a protective wire grid which is quickly and easily attached to it.

A special cable is supplied with the apparatus. Its length is 10 metres.

A switch is provided for disconnecting the electric supply line.

A set of shutters (Fig. 117) may be supplied with the apparatus on special order.

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SPECIFICATIONS

Light source	incandescent 110 V, 5.000 W lamp, or similar 3,000 W lamp
Diameter of reflector	600 mm
Maximum light intensity (with 5,000 W lamp)	not less than 30,000 candles
Angle of diffusion	160°
Reflection factor	not less than 0.75
Overall dimensions of apparatus (without tripod)	250 × 300 × 900 mm
Weight of apparatus	14 kg

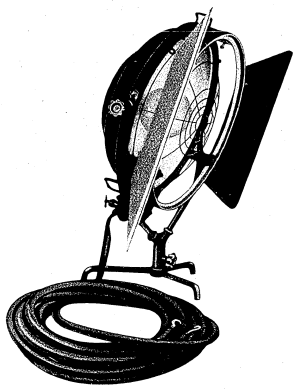

Fig. 117. ПР-60 Apparatus for Diffused Light Illumination, with shutters

РД-5 APPARATUS FOR DIFFUSED LIGHT ILLUMINATION

The РД-5 Apparatus for Diffused Light Illumination (Fig. 118 and 119) is designed for general illumination of large sets indoors and outdoors. The Apparatus is suitable for black-and-white as well as colour filming.

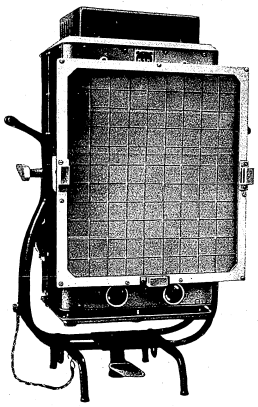

Fig. 118. РД-5 Apparatus for Diffused Light Illumination

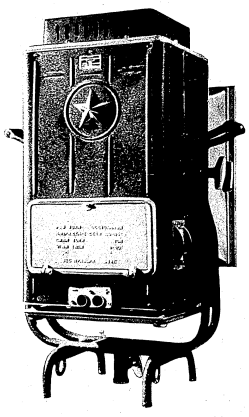

Fig. 119. РД-5 Apparatus for Diffused Light Illumination, rear view

The Apparatus includes the following assemblies:

apparatus body with arc lamp mechanisms and arcuated support;

reflector installed in frame;

diffuser with frame;

electric motors with reduction gearing;

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voltage divider;
ballast rheostat;
10-metre length of connecting cord.

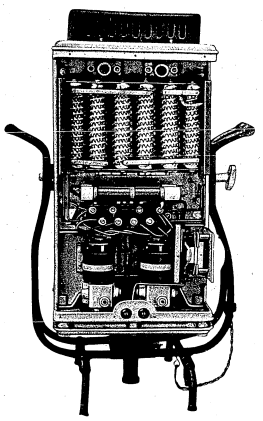

Fig. 120. РД-5 Apparatus for Diffused Light Illumination, rear view with cover removed

Automatic striking and constant operation of both arc lamps are maintained with two electric motors with reduction gearing (Fig. 120).

Styling of body and structural features provide maximum operating convenience.

Heat and sound insulation is ensured by asbestos sheathing of inner surface of body casing.

The apparatus is designed for use with tripod but may be operated set on floor or suspended. Tilting may be effected to an angle $\pm$ 60°.

Two series-connected arc lamps and reflector with light diffuser are supplied with the apparatus.

SPECIFICATIONS

Power supply — from 110—115 V D. C. line.	
Conditions of arc lamp operation:	
Voltage at each arc	34—36 V
Current	40—42 A
Maximum light intensity of spotlight	15,000 candles
Spotlight diffusion angle	130°
The arc lamp is designed to operate with carbons	type "8-40"
	Positive carbon with 8-mm diameter and 300-mm length burns at rate of 110 mm per hour
	Negative carbon with 8-mm diameter and 220-mm length burns at rate of 65 mm per hour
Distance of luminous centre of apparatus (less tripod) from floor level	520 mm
Overall dimensions of apparatus	450 × 560 × 925 mm
Weight of apparatus	54 kg

КПД-15 ARC LAMP SPOTLIGHT

The КПД-15 Arc Lamp Spotlight (Fig. 121) is designed for illumination of portrait subjects, defining details of filmed objects and producing exaggerated light contrasts during synchronous colour filming, etc.

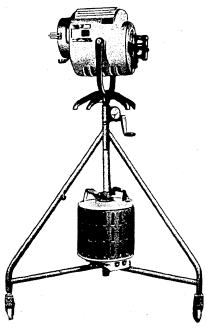

Fig. 121. КПД-15 Arc Lamp Spotlight

The spotlight apparatus includes the following assemblies:
spotlight with 150-mm diameter echelon lens;
ballast rheostat;
tripod;
10-metre length of cable for connection to mains;
shutter and set of snouts, supplied for every five devices;
set of spare parts.

Design and workmanship of tripod provide for smooth lifting and lowering of the extension rod, and easy, noiseless shifting of the spotlight.

Handling of spotlight, setting of lens into mount are effected quickly and easily.

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The arcuated support allows endless horinzontal motion over 360°; vertical tilting is possible up to 180°.

Locking devices secure the apparatus in any desired position.

SPECIFICATIONS

Power supply — from 110—115 V D. C. line.	
Arc Lamp is designed to operate with:	
type "8—40" positive carbon of 8-mm diameter and 220—330 mm length; type "8—60" negative carbon of 7-mm diameter and 130-mm length.	
Conditions of Arc Lamp operation:	
voltage	30 V
current	30 A
Maximum light intensity	300,000 ± 10 % candles
Diffusion angle	7°
Overall dimensions of apparatus:	
without tripod	300 × 400 × 470 mm
with tripod:	
minimum height	1,400 mm
maximum height	2,100 mm
Weight of spotlight	13.5 kg
Weight of apparatus with tripod, rheostat and shutters	39 kg

КПД-25 ARC LAMP SPOTLIGHT

The КПД-25 Arc Lamp Spotlight (Fig. 122) is designed for illumination for synchronous colour filming.

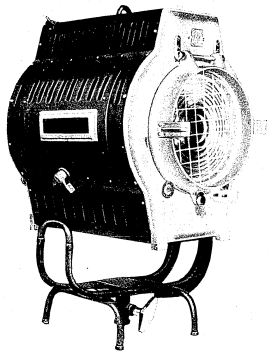

Fig. 122. КПД-25 Arc Lamp Spotlight

The Spotlight includes the following main assemblies (Fig. 123):

body with mount and 250-mm diameter echelon lens;

supporting device for installation and shifting of lamp along its optical axis;

apparatus control instruments;

arcuated support for mounting of apparatus;

semi-automatic intensity arc lamp with instantaneous arc lighting;

ballast rheostat with cable;

shutter and set of snouts (set supplied with every five devices);

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10-metre length of cable with contactor for connection with ballast rheostat and switchboards;
set of spare parts and accessories.

Handling of spotlight, setting of lens in mount is effected quickly and easily.

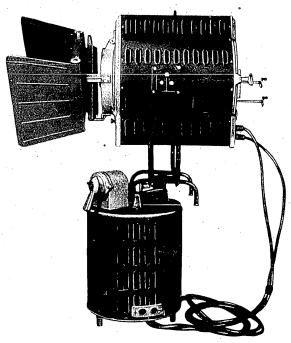

Fig. 123. КПД-25 Arc Lamp Spotlight, complete set

The arcuated support is designed to allow endless horizontal motion of 360°; vertical tilt is possible to an angle of 180°.

Locking devices secure the apparatus in any desired position.

SPECIFICATIONS

Power supply — from 105, 115 and 125 V D. C. line.
The Arc Lamp is designed to operate with:
"11—75" positive carbon of 11-mm diameter and 400-mm length;
"Extra-K" negative carbon of 9-mm diameter and 165-mm length.
Conditions of Arc Lamp operation:
voltage . . . . . 55 V
current . . . . . 75 A
Maximum light intensity . . . . . 1,000,000 ± 20% candles
Diffusion angle . . . . . 9°
Overall dimensions of apparatus (without handles) . . . . . 660 × 590 × 800 mm
Weight of apparatus . . . . . 41 kg
Weight of rheostat with cable . . . . 19 kg

КПД-М ARC LAMP SPOTLIGHT

The КПД-М Arc Lamp Spotlight (Fig. 124) is used for synchronous black-and-white and colour filming indoors and outdoors.

The apparatus is adapted for illumination of actors and background settings, as well as distant sets.

The apparatus includes the following assemblies:

device consisting of arcuated support and cylindrical body with 500-mm diameter lens;

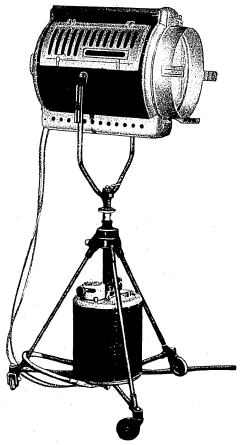

Fig. 124. КПД-М Arc Lamp Spotlight

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A stand (Fig. 126) and 15 metres of special 2×4 mm² cable are supplied with the apparatus.

SPECIFICATIONS

Maximum light intensity[1]	279,000 candles
Diffusion angle[1]	15°
Overall dimensions of apparatus	610 × 480 × 800 mm
Weight of apparatus	24 kg

[1] The above characteristics are true when a 2,000 W, 110 V incandescent lamp of 23 lm/W light efficiency is used with the apparatus.

KIIJI-35 INCANDESCENT LAMP SPOTLIGHT

The KIIJI-35 Spotlight (Fig. 127) is used during indoor and outdoor filming for illumination of actors and sets, as well as theatre and club stages.

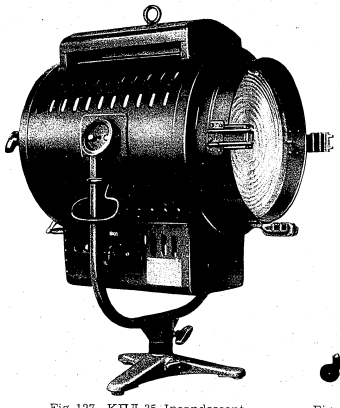

Fig. 127. KIIJI-35 Incandescent Lamp Spotlight

Fig. 128. KIIJI-35 Incandescent Lamp Spotlight with stand

The apparatus includes:

cylinder with 350-mm diameter lens; focusing device for a spotlight incandescent 5,000 W, 110 V lamp; reflector; arcuated support and a 60 A switch.

A stand (Fig. 128) 15 metres of special 2×16 mm² cable and a set of spare parts and accessories are supplied with the apparatus.

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semi-automatic intensity arc lamp with instantaneous arc lighting;

ballast rheostat with cable;

tripod;

shutter and snouts.

SPECIFICATIONS

Power supply — from 105, 115 or 125 V D. C. line;

Power consumption — 16 to 19 kW (depending on voltage);

Mechanism of Arc Lamp driven by D. C. motor.

The Arc operates with high-intensity "ПИ" or "ПЯ" carbons. The positive carbon with 16-mm diameter and 550-mm length. The negative carbon with 11-mm diameter and 220-mm length.

Conditions of Arc Lamp operation:

voltage . . . . . 68—70 V
current . . . . . 150 A

Continuous operation of Arc Lamp must not exceed 30 minutes.

Maximum light intensity . . . . . 5,200,000 candles
Diffusion angle . . . . . 8°
Overall dimensions of apparatus . . . 1,655 × 800 × 2,260 mm
Weight of apparatus . . . . . 95 kg

КПЛ-25 INCANDESCENT LAMP SPOTLIGHT

The КПЛ-25 Spotlight (Fig. 125) is used during indoor and outdoor filming for illumination of actors and sets as well as theatre and club stages.

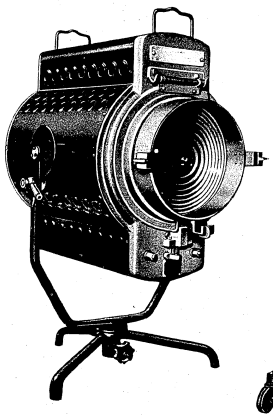

Fig. 125. КПЛ-25 Incandescent Lamp Spotlight

Fig. 126. КПЛ-25 Incandescent Lamp Spotlight, with stand

The apparatus consists of a cylindrical body with a 250-mm diameter lens, a focusing device for a 2,000 W, 110 V incandescent lamp, reflector, arcuated support and 25 A switch.

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A stand (Fig. 126) and 15 metres of special 2×4 mm² cable are supplied with the apparatus.

SPECIFICATIONS

Maximum light intensity[1]	279,000 candles
Diffusion angle[1]	15°
Overall dimensions of apparatus	610 × 480 × 800 mm
Weight of apparatus	24 kg

[1] The above characteristics are true when a 2,000 W, 110 V incandescent lamp of 23 lm/W light efficiency is used with the apparatus.

КПЛ-35 INCANDESCENT LAMP SPOTLIGHT

The КПЛ-35 Spotlight (Fig. 127) is used during indoor and outdoor filming for illumination of actors and sets, as well as theatre and club stages.

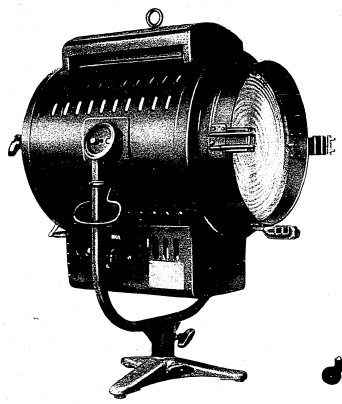

Fig. 127. КПЛ-35 Incandescent Lamp Spotlight

Fig. 128. КПЛ-35 Incandescent Lamp Spotlight with stand

The apparatus includes:

cylinder with 350-mm diameter lens; focusing device for a spotlight incandescent 5,000 W, 110 V lamp; reflector; arcuated support and a 60 A switch.

A stand (Fig. 128) 15 metres of special 2×16 mm² cable and a set of spare parts and accessories are supplied with the apparatus.

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SPECIFICATIONS

Maximum light intensity[1]	500,000 candles
Diffusion angle[1]	16°
Overall dimension of apparatus	690 × 570 × 930 mm
Weight of spotlight	34 kg

[1] The above characteristics are true when a 5,000 W, 110 V incandescent lamp of 26.5 lm/W efficiency is used with the apparatus.

КПЛ-50 INCANDESCENT LAMP SPOTLIGHT

The КПЛ-50 Spotlight (Fig. 129) is for indoor and outdoor illumination of actors and sets as well as theatre stages.

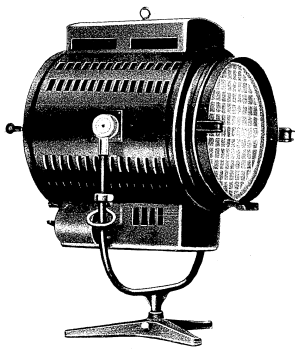

Fig. 129. КПЛ-50 Incandescent Lamp Spotlight

Fig. 130. КПЛ-50 Incandescent Lamp Spotlight, with stand

The Spotlight includes the following assemblies:

cylinder with 500-mm diameter lens; focusing device for incandescent 5,000 or 10,000 W, 110 V spotlight lamp; reflector; arcuated support and special throw-over switch for starter resistance which reduces starting current when lamp is switched on.

20 metres of special 2×25 mm² cable, stand (Fig. 130), a set of spare parts and accessories are supplied.

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SPECIFICATIONS

Maximum light intensity[1]	1,390,000 candles
Diffusion angle[1]	17°
Overall dimensions of apparatus	845 × 720 × 1,130 mm
Weight of apparatus	65 kg

[1] The above characteristics are true when a 10,000 W, 110 V incandescent lamp of 27.8 lm/W light efficiency is used.

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For cables: Stankoimport Moscow
Phone: Г 4-21-32

Design and specifications of the equipment illustrated herein are subject to change without notice.

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CABLE ADDRESS:

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150507

CRANE ON PNEUMATIC TIRES

Model K-102

The Model K-102 Crane on Pneumatic Tires has a load-lifting capacity of 10 t and is designed for handling and mounting operations.

The standard length of the crane boom is 10 m and, if necessary, can be lengthened up to 18 m by the aid of an insert, 8 m in length.

The crane is supplied with a gooseneck for loading over large-sized loads up to 2 t in weight at small gabs with a lengthened boom.

The Model K-102 Crane can work with a hook, as well as with a grab and can perform the following operations:

a) Hoisting and lowering loads;
b) Boom lifting;
c) Swinging the boom for 360°;
d) Travelling with lifted loads.

MAIN SPECIFICATIONS

1. TECHNICAL SPECIFICATIONS

Boom 10 m		Boom 18 m	
Load, t	Gab, m	Load, t	Gab, m
10	4	7.5	4
8	5	5	6
5	7	3.5	8
3	10	2	12
—	—	1	17

When working with a gooseneck on an 18 m boom at a maximum gab $L_{max} = 10$ m, the maximum load that can be lifted is $Q_{max} = 2$ t.

MINIMUM STABILITY FACTOR
(with additional loads taken into account)

With load		Without load
Boom 10 m	Boom 18 m	Boom 10 m
1.27	1.28	9.54

2. POWER PLANT

For driving the crane mechanisms a direct-injection Diesel engine is installed:

Model КДМ-46
Rated output . . . . . 80 H.P.
Speed at rated output . . . . . 835 r.p.m.

3. OPERATING SPEEDS

Hook hoist with 10 m boom . . . 19.5 m per min
Hook hoist with 18 m boom . . . 29.25 m per min
Grab hoist . . . . . 58.5 m per min
Crane rotation . . . . . 3 r.p.m.
Time of boom gab change (from maximum to minimum) . . . 45 sec
Travel:
a) Self-propelled at first speed 2.94 km per hour
b) Self-propelled at second speed . . . . . 7.28 km per hour

4. WINCH SPECIFICATIONS

Loading drum diameter . . . . . 420 mm
Grab drum diameter . . . . . 420 mm
Boom drum diameter . . . . . 390 mm
Ratio of load hoisting tackle with a 10 m boom 3
Ratio of load hoisting tackle with an 18 m boom 2
Ratio of boom tackle 4
Block diameter . . . . . 400 mm

STAT

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5. BRAKES

Load hoist	Controlled band brake
Grab hoist	Controlled band brake
Boom hoist	Constantly engaged band brake
Rotation	Controlled band brake
Travel	Controlled band brake

6. RUNNING GEAR

Average wheel track width:	
a) rear wheels	3010 mm
b) front wheels	2900 mm
Diameter of running wheels	1120 mm
Minimum radius (internal) of road curves	8 m
Maximum surmountable up-grade rise when travelling without load along a cobblestone road	9°12′
Maximum pressure on the running wheels:	
a) during crane operation	5.5 t
b) during travel	2.4 t
Number of running wheels:	
a) front turning wheels	2 pair
b) rear driving wheels	4 pair
Standard pressure in the tires	5.6 kg per sq. cm

7. OVERALL DIMENSIONS (mm)

Longitudinal chassis base	4050
Maximum distance between wheel axles	4810
Height in travel position	4150
Total length in travel position (without boom)	6864
Maximum crane width	3710
Radius, circumscribed by the turntable	3090

8. WEIGHT SPECIFICATIONS (kg)

Crane with boom $L = 10$ m	27600
Crane turntable without boom and hook	13140
Crane non-rotating part	13185
Boom $L = 10$ m with hook	1275
Boom $L = 18$ m with hook	1822

9. WIRE ROPE SPECIFICATIONS

Designation	Rope diameter, mm	Number of strands	Number of wires in one strand	Type	Tensile strength, kg per sq · mm	Total breaking force, kg	Rope length, m
For auxiliary hook	13.5	6	19	Warrington	150	8800	65
Loading rope	21	6	19	Warrington	150	23800	60
Boom rope	21	6	19	Warrington	150	23800	57
Grab rope	21	6	19	Warrington	150	23800	50

10. CHAIN SPECIFICATIONS

Unit	Designation	Number of links
Engine unit Model KJM-46	Four-row bush-and-roller chain $t = 19.05$ mm, breaking load 10000 kg	208
Rear trolley	Single-row bush-and-roller chain with curved plates, $t = 78.1$ mm, breaking load 30000 kg	4 chains with 33 links and 2 chains with 50 links each

11. COUPLINGS AND CLUTCHES

Load hoisting	Friction band
Grab hoisting	Friction band
Boom hoisting	Gear-carriage
Rotation	Claw
Loading lowering on engine duty	Friction band
Travel	Toothed
Engine starting	Friction disc
Load hoisting winch reversing gear	Friction conical
Boom lifting reversing gear	Friction conical
Travel reversing gear	Friction conical

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CRANE ON PNEUMATIC TIRES

Model K-102

The Model K-102 Crane on Pneumatic Tires has a load-lifting capacity of 10 t and is designed for handling and mounting operations.

The standard length of the crane boom is 10 m and, if necessary, can be lengthened up to 18 m by the aid of an insert, 8 m in length.

The crane is supplied with a gooseneck for loading over large-sized loads up to 2 t in weight at small gabs with a lengthened boom.

The Model K-102 Crane can work with a hook, as well as with a grab and can perform the following operations:

a) Hoisting and lowering loads;
b) Boom lifting;
c) Swinging the boom for 360°;
d) Travelling with lifted loads.

MAIN SPECIFICATIONS

1. TECHNICAL SPECIFICATIONS

Boom 10 m		Boom 18 m	
Load, t	Gab, m	Load, t	Gab, m
10	4	7.5	4
8	5	5	6
5	7	3.5	8
3	10	2	12
—	—	1	17

When working with a gooseneck on an 18 m boom at a maximum gab $L_{max} = 10$ m, the maximum load that can be lifted is $Q_{max} = 2$ t.

MINIMUM STABILITY FACTOR
(with additional loads taken into account)

With load		Without load
Boom 10 m	Boom 18 m	Boom 10 m
1.27	1.28	9.54

2. POWER PLANT

For driving the crane mechanisms a direct-injection Diesel engine is installed:

Model	KJM-46
Rated output	80 H.P.
Speed at rated output	835 r.p.m.

3. OPERATING SPEEDS

Hook hoist with 10 m boom	19.5 m per min
Hook hoist with 18 m boom	29.25 m per min
Grab hoist	58.5 m per min
Crane rotation	3 r.p.m.
Time of boom gab change (from maximum to minimum)	45 sec
Travel:	
a) Self-propelled at first speed	2.94 km per hour
b) Self-propelled at second speed	7.28 km per hour

4. WINCH SPECIFICATIONS

Loading drum diameter	420 mm
Grab drum diameter	420 mm
Boom drum diameter	390 mm
Ratio of load hoisting tackle with a 10 m boom	3
Ratio of load hoisting tackle with an 18 m boom	2
Ratio of boom tackle	4
Block diameter	400 mm

VSESOJUZNOJE OBJEDINENIJE
« MACHINOEXPORT »

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5. BRAKES

Load hoist	Controlled band brake
Grab hoist	Controlled band brake
Boom hoist	Constantly engaged band brake
Rotation	Controlled band brake
Travel	Controlled band brake

6. RUNNING GEAR

Average wheel track width:	
a) rear wheels	3010 mm
b) front wheels	2900 mm
Diameter of running wheels	1120 mm
Minimum radius (internal) of road curves	8 m
Maximum surmountable up-grade rise when travelling without load along a cobblestone road	9°12′
Maximum pressure on the running wheels:	
a) during crane operation	5.5 t
b) during travel	2.4 t
Number of running wheels:	
a) front turning wheels	2 pair
b) rear driving wheels	4 pair
Standard pressure in the tires	5.6 kg per sq. cm

7. OVERALL DIMENSIONS (mm)

Longitudinal chassis base	4050
Maximum distance between wheel axles	4810
Height in travel position	4150
Total length in travel position (without boom)	6864
Maximum crane width	3710
Radius, circumscribed by the turntable	3090

8. WEIGHT SPECIFICATIONS (kg)

Crane with boom $L = 10$ m	27600
Crane turntable without boom and hook	13140
Crane non-rotating part	13185
Boom $L = 10$ m with hook	1275
Boom $L = 18$ m with hook	1822

9. WIRE ROPE SPECIFICATIONS

Designation	Rope diameter, mm	Number of strands	Number of wires in one strand	Type	Tensile strength, kg per sq · mm	Total breaking force, kg	Rope length, m
For auxiliary hook	13.5	6	19	Warrington	150	8800	65
Loading rope	21	6	19	Warrington	150	23800	60
Boom rope	21	6	19	Warrington	150	23800	57
Grab rope	21	6	19	Warrington	150	23800	50

10. CHAIN SPECIFICATIONS

Unit	Designation	Number of links
Engine unit Model КДМ-46	Four-row bush-and-roller chain $t = 19.05$ mm, breaking load 10000 kg	208
Rear trolley	Single-row bush-and-roller chain with curved plates, $t = 78.1$ mm, breaking load 30000 kg	4 chains with 33 links and 2 chains with 50 links each

11. COUPLINGS AND CLUTCHES

Load hoisting	Friction band
Grab hoisting	Friction band
Boom hoisting	Gear-carriage
Rotation	Claw
Loading lowering on engine duty	Friction band
Travel	Toothed
Engine starting	Friction disc
Load hoisting winch reversing gear	Friction conical
Boom lifting reversing gear	Friction conical
Travel reversing gear	Friction conical

DIAGRAM OF MECHANISM

GEAR WHEELS AND CHAIN GEARS

Nos.	Z	m or t, mm	n, r. p. m.	Nos.	Z	m ort t, mm	n, r. p. m.
1	23	19.05	835	22	13	14	135
2	106	19.05	182	23	147	8	38.5
3	79	8	182	24	32	14	101
4	18	12	182	25	43	14	40.8
5	18	12	182	26	143	14	3
6	27	12	121	27	16	20	101 / 40.8
7	18	10	121	28	24	20	67.3 / 27.2
8	61	10	35.8	29	9	10	—
9	12	14	35.8	30	24	10	67.3 / 27.2
10	12	10	182	31	42	10	67.3 / 27.2
11	Single-thread worm	15	182	32	14	78.1	67.3 / 27.2
12	24	15	7.6	33	14	78.1	47.1 / 19
13	28	8	202	34	20	78.1	47.1 / 19
14	63	5	202	35	11	78.1	47.1 / 19
15	15	5	—	36	20	78.1	47.1 / 19
16	33	5	202	37	11	78.1	34.5 / 13.9
17	71	8	202	38	15	78.1	34.5 / 13.9
18	18	12	202	39	15	78.1	34.5 / 13.9
19	18	12	202	40	15	78.1	34.5 / 13.9
20	27	12	135	41	15	78.1	
21	24	14	135				

KRAN MIT PNEUMATIK-REIFEN

Modell K-102

Der fahrbare Kran, Modell K-102, mit einer Tragfähigkeit von 10 t besitzt Pneumatik-Radreifen. Er ist sowohl für Verlade- und Entladearbeiten wie auch für Montagearbeiten bestimmt.

Der normale Ausleger des Krans hat eine Länge von 10 m. Im Bedarfsfalle kann der Ausleger mit Hilfe eines 8 m langen Einsatzes bis auf 18 m verlängert werden.

Zwecks Umladung von sperrigen Lasten bis

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zu 2 t Gewicht mit verlängertem Ausleger bei nicht großen Ausladungen wird der Kran mit einem zusätzlichen Spitzenausleger versehen.

Der K-102-Kran kann sowohl mit einem Haken als auch mit einem Greifer arbeiten und führt folgende Operationen aus:

a) Heben und Senken von Lasten;
b) Heben und Senken des Auslegers;
c) Schwenkung des Auslegers um 360°;
d) Fahrbewegung mit gehobener Last.

TECHNISCHE HAUPTDATEN

1. TECHNISCHE CHARAKTERISTIK

Ausleger 10 m		Ausleger 18 m	
Belastung, t	Ausladung, m	Belastung, t	Ausladung, m
10	4	7,5	4
8	5	5	6
5	7	3,5	8
3	10	2	12
—	—	1	17

Bei Verwendung auf dem 18-m-Ausleger eines Spitzenauslegers und maximalen Ausladung L_{max} =10 m kann eine Höchstlast Q_{max} = 2 t gehoben werden.

KLEINSTER STANDFESTIGKEITSKOEFFIZIENT

(mit Berücksichtigung der zusätzlichen Belastungen)

Mit Last		Eigenstandfestigkeit
Ausleger 10 m	Ausleger 18 m	Ausleger 10 m
1,27	1,28	9,54

2. KRAFTANLAGE

Der Antrieb der Krantriebwerke erfolgt durch einen kompressorlosen Dieselmotor:

Type	KДM-46
Nennleistung	80 P.S.
Drehzahl bei Nennleistung	835 U/min

3. ARBEITSGESCHWINDIGKEITEN

Hakenhub bei 10-m-Ausleger	19,5 m/min
Hakenhub bei 18-m-Ausleger	29,25 m/min
Greiferhub	58,5 m/min
Drehung des Krans	3,0 U/min
Dauer der Ausladungsänderung des Auslegers (von maximalen bis zur minimalen)	45 Sek.
Fahrgeschwindigkeit:	
a) Selbstfahrer, erste Geschwindigkeitsstufe	2,94 km/Std
b) Selbstfahrer, zweite Geschwindigkeitsstufe	7,28 km/Std

4. DATEN DER WINDEN

Durchmesser der Lasttrommel	420 mm
Durchmesser der Greifertrommel	420 mm
Durchmesser der Auslegertrommel	390 mm
Anzahl der Rollenpaare des Lastheberollenzugs bei 10-m-Ausleger	3
Anzahl der Rollenpaare des Lastheberollenzugs bei 18-m-Ausleger	2
Anzahl der Rollenpaare des Rollenzugs für das Heben des Auslegers	4
Rollendurchmesser	400 mm

5. BREMSEN

Hebung der Last	Bandbremse, gesteuert
Hebung des Greifers	Bandbremse, gesteuert
Hebung des Auslegers	Bandbremse, dauernd geschlossen
Drehung	Bandbremse, gesteuert
Fortbewegung	Bandbremse, gesteuert

6. FAHRGESTELL

Mittlere Spurweite:	
a) der Hinterräder	3010 mm
b) der Vorderräder	2900 mm
Durchmesser der Laufräder	1120 mm
Kleinster Straßenabrundungsradius	8 m
Oberwindbare Höchststeigung bei lastfreier Fortbewegung über Steinpflaster	9°12′
Maximaler Druck auf die Laufräder:	
a) während der Arbeit des Krans	5,5 t
b) während des Transports	2,4 t
Anzahl der Laufräder:	
a) der vorderen Wenderäder	2 Paar
b) der hinteren Antriebsräder	4 Paar
Normaler Druck in den Reifen	5,6 at

7. ABMESSUNGEN (mm)

Länge der Fahrgestellgrundfläche	4050
Maximaler Radachsabstand	4810
Höhe während der Fortbewegung	4150
Gesamtlänge während der Fortbewegung (ohne Ausleger)	6864
Größte Kranbreite	3710
Vom drehbaren Teil beschriebener Radius	3090

8. GEWICHTSDATEN (kg)

Kran mit Ausleger L = 10 m	27600
Drehbarer Teil des Krans ohne Ausleger und Haken	13140
Nichtdrehbarer Teil des Krans	13185
Ausleger L = 10 m mit Haken	1275
Ausleger L = 18 m mit Haken	1822

9. CHARAKTERISTIK DER DRAHTSEILE

Benennung	Seildurchmesser, mm	Anzahl der Seilsträhnen	Anzahl der Drähte in der Strähne	Type	Zerreißfestigkeit, kg/mm²	Gesamte Seilzerreißkraft, kg	Seillänge, m
Hilfshakenseil	13,5	6	19	Warrington	150	8800	65
Lastseil	21	6	19	Warrington	150	23800	60
Auslegerseil	21	6	19	Warrington	150	23800	57
Greiferseil	21	6	19	Warrington	150	23800	50

10. CHARAKTERISTIK DER KETTEN

Verwendungsstelle	Benennung	Gliederzahl
Aufstellung des Motors КДМ-46	Vierreihige Büchsenrollenkette, t = 19,05 mm, Zerreißkraft 10000 kg	208
Hintere Laufkatze	Einreihige Büchsenrollenkette mit gebogenen Platten, t = 78,1 mm, Zerreißkraft 30000 kg	4 Ketten je 33 Glieder und 2 Ketten je 50 Glieder

11. KUPPLUNGEN

Hebung der Last	Friktionsbandkupplung
Hebung des Greifers	Friktionsbandkupplung
Drehung	Klauenkupplung
Senkung der Last durch Motorantrieb	Friktionsbandkupplung
Fortbewegung	Zahnkupplung
Motoreinschaltung	Friktionsscheibenkupplung
Umsteuerung der Lasthebewinde	Kegelkupplung
Umsteuerung der Auslegerdrehung und Hebung	Kegelkupplung
Umsteuerung des Fahrgetriebes	Kegelkupplung

KINEMATISCHES SCHEMA

ZAHN- UND STERNRÄDER

Nr.	Z	m oder t, mm	n, U/min	Nr.	Z	m oder t, mm	n, U/min
1	23	19,05	835	10	12	10	182
2	106	19,05	182	11	Eingängs-Schnecke	15	182
3	79	8	182	12	24	15	7,6
4	18	12	182	13	28	8	202
5	18	12	182	14	63	5	202
6	27	12	121	15	15	5	—
7	18	10	121	16	33	5	202
8	61	10	35,8	17	71	8	202
9	12	14	35,8	18	18	12	202

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Nr.	Z	m oder t, mm	n, U/min	Nr.	Z	m oder t, mm	n, U/min
19	18	12	202	31	42	10	67,3 / 27,2
20	27	12	135	32	14	78,1	67,3 / 27,2
21	24	14	135	33	14	78,1	67,3 / 27,2
22	13	14	135	34	20	78,1	47,1 / 19
23	147	8	38,5	35	11	78,1	47,1 / 19
24	32	14	101	36	20	78,1	47,1 / 19
25	43	14	40,8	37	11	78,1	47,1 / 19
26	143	14	3	38	15	78,1	34,5 / 13,9
27	16	20	101 / 40,8	39	15	78,1	34,5 / 13,9
28	24	20	67,3 / 27,2	40	15	78,1	34,5 / 13,9
29	9	10	—	41	15	78,1	34,5 / 13,9
30	24	10	67,3 / 27,2				

GRUE SUR TRAIN A PNEUMATIQUES

Modèle K-102

La grue de 10 t sur train à pneumatiques, modèle K-102, est destinée aux travaux de manutention et de montage.

La flèche normale de la grue a une longueur égale à 10 m. En cas de besoin, à l'aide d'une rallonge de 8 m, elle peut être portée à 18 m.

Pour transbordements avec flèche allongée et portées modérées de charges à grand encombrement et à poids jusqu'à 2 t, la grue est dotée d'un bec recourbé.

La grue modèle K-102 peut fonctionner aussi bien avec un crochet qu'avec une benne preneuse et peut effectuer les opérations suivantes:

a) Montée et descente des charges;
b) Montée et descente de la flèche;
c) Rotation de la flèche de 360°;
d) Déplacement avec charge levée.

PRINCIPALES DONNÉES TECHNIQUES

1. CARACTÉRISTIQUES TECHNIQUES

Flèche de 10 m		Flèche de 18 m	
Charge, t	Portée, m	Charge, t	Portée, m
10	4	7,5	4
8	5	5	6
5	7	3,5	8
3	10	2	12
—	—	1	17

Lors du fonctionnement avec un bec recourbé et flèche de 18 m avec une portée maximum de L_{max} =10 m, la grue peut soulever une charge de Q_{max} =2 t.

FACTEUR DE STABILITÉ MINIMUM

(compte tenu de charges complémentaires)

Avec charge		A vide
Flèche de 10 m	Flèche de 18 m	Flèche de 10 m
1,27	1,28	9,54

2. MOTEUR

Les mécanismes de la grue sont commandés par un moteur Diesel à injection mécanique:

Marque du moteur КДМ-46
Puissance nominale . . . . . 80 C.V.
Vitesse de rotation à la puissance nominale . . . . . 835 tr/min

3. VITESSES DE MANOEUVRE

Levée du crochet avec flèche de 10 m . . . . . 19,5 m/min
Levée du crochet avec flèche de 18 m . . . . . 29,25 m/min
Levée de la benne preneuse . . . 58,5 tr/min
Rotation de la grue . . . . . 3,0 tr/min
Durée de variations des portées de la grue (entre les valeurs minimum et maximum) . . . . 45 sec
Déplacement:
a) marche autopropulsée en 1re vitesse . . . . . 2,94 km/heure
b) marche autopropulsée en 2e vitesse . . . . . 7,28 km/heure

4. CARACTERISTIQUES DES TREUILS

Diamètre du tambour de charge . . . . 420 mm
Diamètre du tambour de benne preneuse 420 mm
Diamètre du tambour de flèche . . . . 390 mm
Rapport du moufle de levée de la charge (flèche de 10 m) 3
Rapport du moufle de levée de la charge (flèche de 18 m) 2
Rapport du moufle de levée de la flèche 4
Diamètre des poulies des moufles . . . 400 mm

5. FREINS DES MOUVEMENTS

De levée de la charge . . à ruban, commandé
De levée de la benne preneuse . . . . . à ruban, commandé
De levée de la flèche . . . à ruban, constamment en prise
Du mécanisme de rotation . à ruban, commandé
Du mécanisme de déplacement . . . . . à ruban, commandé

6. TRAIN

Voie moyenne des roues:
a) arrière . . . . . 3010 mm
b) avant . . . . . 2900 mm
Diamètre des roues du train . . . . . 1120 mm
Rayon de braquage (intérieur) minimum 8 m
Pente franchissable maximum en marche à vide sur chaussée empierrée . . . 9°12′
Pression maximum sur les roues du train:
a) en utilisation . . . . . 5,5 t
b) en déplacement . . . . . 2,4 t
Nombre de roues du train:
a) roues AV de direction . . . . . 2 paires
b) roues AR motrices . . . . . 4 paires
Pression de gonflage des pneus . . . . 5,6 at

7. COTES D'ENCOMBREMENT (mm)

Empattement du châssis 4050
Ecart maximum entre les centres de roues 4810
Hauteur en ordre de déplacement . . . 4150
Longueur totale en ordre de déplacement (sans flèche) 6864
Largeur maximum de la grue 3710
Rayon de braquage de la plate-forme pivotante 3090

8. POIDS (kg)

Grue avec une flèche de 10 m 27600
Partie pivotante de la grue sans flèche ni crochet 13140
Partie non pivotante de la grue 13185
Flèche de L = 10 m avec crochet . . . 1275
Flèche de L = 18 m avec crochet . . . 1822

9. CARACTÉRISTIQUES DES CÂBLES METALLIQUES

Destination des câbles	Diamètre du câble, mm	Nombre de torons	Nombre de fils par toron	Type	Résistance à la rupture, kg/mm²	Charge de rupture totale, kg	Longueur du câble, m
Crochet auxiliaire	13,5	6	19	Warrington . . .	150	8800	65
Charge	21	6	19	Warrington . . .	150	23800	60
Flèche	21	6	19	Warrington . . .	150	23800	57
Benne preneuse .	21	6	19	Warrington . . .	150	23800	50

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10. CARACTÉRISTIQUES DES CHAINES

Ensemble	Dénominations des chaines	Nombre de maillons
Moteur KJM-46	Chaîne à quatre rangées de rouleaux, $t = 19{,}05$ mm, charge de rupture 10000 kg	208
Chariot arrière	Chaîne à une rangée de rouleaux à plaques courbées, $t = 78{,}1$ mm; charge de rupture 30000 kg	4 chaînes de 33 maillons et 2 chaînes de 50 maillons

11. MANCHONS D'ACCOUPLEMENT

Levée de charge	à ruban, à friction	Mécanisme de renversement de marche du treuil de levée de la charge	conique, à friction
Levée de benne preneuse	à ruban, à friction		
Levée de flèche	à pignon baladeur	Mécanisme de renversement du sens de rotation et de levée de la flèche	conique, à friction
Rotation	à griffes		
Descente de la charge avec le moteur en marche	à ruban, à friction	Mécanisme de renversement de marche, déplacement	conique, à friction
Déplacement	denté		
Mise en route du moteur	à disque, à friction		

SCHÉMA CINEMATIQUE

PIGNONS ET NOIX

Repères, nos	Z	m ou t, mm	n, tr/min	Repères, nos	Z	m ou t, mm	n, tr/min
1	23	19,05	835	22	13	14	135
2	106	19,05	182	23	147	8	38,5
3	79	8	182	24	32	14	101
4	18	12	182	25	43	14	40,8
5	18	12	182	26	143	14	3
6	27	12	121	27	16	20	101 / 40,8
7	18	10	121	28	24	20	67,3 / 27,2
8	61	10	35,8	29	9	10	—
9	12	14	35,8	30	24	10	67,3 / 27,2
10	12	10	182	31	42	10	67,3 / 27,2
11	vis sans fin à un filet	15	182	32	14	78,1	67,3 / 27,2
12	24	15	7,6	33	14	78,1	47,1 / 19
13	28	8	202	34	20	78,1	47,1 / 19
14	63	5	202	35	11	78,1	47,1 / 19
15	15	5	—	36	20	78,1	47,1 / 19
16	33	5	202	37	11	78,1	34,5 / 13,9
17	71	8	202	38	15	78,1	34,5 / 13,9
18	18	12	202	39	15	78,1	34,5 / 13,9
19	18	12	202	40	15	78,1	34,5 / 13,9
20	27	12	135	41	15	78,1	34,5 / 13,9
21	24	14	135				

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DIAGRAM OF MECHANISM

GEAR WHEELS AND CHAIN GEARS

Nos.	Z	m or t, mm	n, r. p. m.	Nos.	Z	m ort t, mm	n, r. p. m.
1	23	19.05	835	22	13	14	135
2	106	19.05	182	23	147	8	38.5
3	79	8	182	24	32	14	101
4	18	12	182	25	43	14	40.8
5	18	12	182	26	143	14	3
6	27	12	121	27	16	20	101 / 40.8
7	18	10	121	28	24	20	67.3 / 27.2
8	61	10	35.8	29	9	10	—
9	12	14	35.8	30	24	10	67.3 / 27.2
10	12	10	182	31	42	10	67.3 / 27.2
11	Single-thread worm	15	182	32	14	78.1	67.3 / 27.2
12	24	15	7.6	33	14	78.1	67.3 / 27.2
13	28	8	202	34	20	78.1	47.1 / 19
14	63	5	202	35	11	78.1	47.1 / 19
15	15	5	—	36	20	78.1	47.1 / 19
16	33	5	202	37	11	78.1	47.1 / 19
17	71	8	202	38	15	78.1	34.5 / 13.9
18	18	12	202	39	15	78.1	34.5 / 13.9
19	18	12	202	40	15	78.1	34.5 / 13.9
20	27	12	135	41	15	78.1	34.5 / 13.9
21	24	14	135				

KRAN MIT PNEUMATIK-REIFEN

Modell K-102

Der fahrbare Kran, Modell K-102, mit einer Tragfähigkeit von 10 t besitzt Pneumatik-Radreifen. Er ist sowohl für Verlade- und Entladearbeiten wie auch für Montagearbeiten bestimmt.

Der normale Ausleger des Krans hat eine Länge von 10 m. Im Bedarfsfalle kann der Ausleger mit Hilfe eines 8 m langen Einsatzes bis auf 18 m verlängert werden.

Zwecks Umladung von sperrigen Lasten bis

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zu 2 t Gewicht mit verlängertem Ausleger bei nicht großen Ausladungen wird der Kran mit einem zusätzlichen Spitzenausleger versehen.

Der K-102-Kran kann sowohl mit einem Haken als auch mit einem Greifer arbeiten und führt folgende Operationen aus:

a) Heben und Senken von Lasten;
b) Heben und Senken des Auslegers;
c) Schwenkung des Auslegers um 360°;
d) Fahrbewegung mit gehobener Last.

TECHNISCHE HAUPTDATEN

1. TECHNISCHE CHARAKTERISTIK

Ausleger 10 m		Ausleger 18 m	
Belastung, t	Ausladung, m	Belastung, t	Ausladung, m
10	4	7,5	4
8	5	5	6
5	7	3,5	8
3	10	2	12
—	—	1	17

Bei Verwendung auf dem 18-m-Ausleger eines Spitzenauslegers und maximalen Ausladung L_{max} =10 m kann eine Höchstlast Q_{max} = 2 t gehoben werden.

KLEINSTER STANDFESTIGKEITSKOEFFIZIENT
(mit Berücksichtigung der zusätzlichen Belastungen)

Mit Last		Eigenstandfestigkeit
Ausleger 10 m	Ausleger 18 m	Ausleger 10 m
1,27	1,28	9,54

2. KRAFTANLAGE

Der Antrieb der Krantriebwerke erfolgt durch einen kompressorlosen Dieselmotor:

Type	КДМ-46
Nennleistung	80 P.S.
Drehzahl bei Nennleistung	835 U/min

3. ARBEITSGESCHWINDIGKEITEN

Hakenhub bei 10-m-Ausleger	19,5 m/min
Hakenhub bei 18-m-Ausleger	29,25 m/min
Greiferhub	58,5 m/min
Drehung des Krans	3,0 U/min
Dauer der Ausladungsänderung des Auslegers (von maximalen bis zur minimalen)	45 Sek.
Fahrgeschwindigkeit:	
a) Selbstfahrer, erste Geschwindigkeitsstufe	2,94 km/Std
b) Selbstfahrer, zweite Geschwindigkeitsstufe	7,28 km/Std

4. DATEN DER WINDEN

Durchmesser der Lasttrommel	420 mm
Durchmesser der Greifertrommel	420 mm
Durchmesser der Auslegertrommel	390 mm
Anzahl der Rollenpaare des Lastheberollenzugs bei 10-m-Ausleger	3
Anzahl der Rollenpaare des Lastheberollenzugs bei 18-m-Ausleger	2
Anzahl der Rollenpaare des Rollenzugs für das Heben des Auslegers	4
Rollendurchmesser	400 mm

5. BREMSEN

Hebung der Last	Bandbremse, gesteuert
Hebung des Greifers	Bandbremse, gesteuert
Hebung des Auslegers	Bandbremse, dauernd geschlossen
Drehung	Bandbremse, gesteuert
Fortbewegung	Bandbremse, gesteuert

6. FAHRGESTELL

Mittlere Spurweite:	
a) der Hinterräder	3010 mm
b) der Vorderräder	2900 mm
Durchmesser der Laufräder	1120 mm
Kleinster Straßenabrundungsradius	8 m
Überwindbare Höchststeigung bei lastfreier Fortbewegung über Steinpflaster	9°12′
Maximaler Druck auf die Laufräder:	
a) während der Arbeit des Krans	5,5 t
b) während des Transports	2,4 t
Anzahl der Laufräder:	
a) der vorderen Wenderäder	2 Paar
b) der hinteren Antriebsräder	4 Paar
Normaler Druck in den Reifen	5,6 at

7. ABMESSUNGEN (mm)

Länge der Fahrgestellgrundfläche	4050
Maximaler Radachsabstand	4810
Höhe während der Fortbewegung	4150
Gesamtlänge während der Fortbewegung (ohne Ausleger)	6864
Größte Kranbreite	3710
Vom drehbaren Teil beschriebener Radius	3090

8. GEWICHTSDATEN (kg)

Kran mit Ausleger L = 10 m	27600
Drehbarer Teil des Krans ohne Ausleger und Haken	13140
Nichtdrehbarer Teil des Krans	13185
Ausleger L = 10 m mit Haken	1275
Ausleger L = 18 m mit Haken	1822

9. CHARAKTERISTIK DER DRAHTSEILE

Benennung	Seildurchmesser, mm	Anzahl der Seilsträhnen	Anzahl der Drähte in der Strähne	Type	Zerreißfestigkeit, kg/mm²	Gesamte Seilzerreißkraft, kg	Seillänge, m
Hilfshakenseil	13,5	6	19	Warrington	150	8800	65
Lastseil	21	6	19	Warrington	150	23800	60
Auslegerseil	21	6	19	Warrington	150	23800	57
Greiferseil	21	6	19	Warrington	150	23800	50

10. CHARAKTERISTIK DER KETTEN

Verwendungsstelle	Benennung	Gliederzahl
Aufstellung des Motors КДМ-46	Vierreihige Büchsenrollenkette, t = 19,05 mm, Zerreißkraft 10000 kg	208
Hintere Laufkatze	Einreihige Büchsenrollenkette mit gebogenen Platten, t = 78,1 mm, Zerreißkraft 30000 kg	4 Ketten je 33 Glieder und 2 Ketten je 50 Glieder

11. KUPPLUNGEN

Hebung der Last	Friktionsbandkupplung
Hebung des Greifers	Friktionsbandkupplung
Drehung	Klauenkupplung
Senkung der Last durch Motorantrieb	Friktionsbandkupplung
Fortbewegung	Zahnkupplung
Motoreinschaltung	Friktionsscheibenkupplung
Umsteuerung der Lasthebewinde	Kegelkupplung
Umsteuerung der Auslegerdrehung und Hebung	Kegelkupplung
Umsteuerung des Fahrgetriebes	Kegelkupplung

KINEMATISCHES SCHEMA

ZAHN- UND STERNRÄDER

Nr.	Z	m oder t, mm	n, U/min	Nr.	Z	m oder t, mm	n, U/min
1	23	19,05	835	10	12	10	182
2	106	19,05	182	11	Eingangs-Schnecke	15	182
3	79	8	182	12	24	15	7,6
4	18	12	182	13	28	8	202
5	18	12	182	14	63	5	202
6	27	12	121	15	15	5	—
7	18	10	121	16	33	5	202
8	61	10	35,8	17	71	8	202
9	12	14	35,8	18	18	12	202

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Nr.	Z	m oder t, mm	n, U/min	Nr.	Z	m oder t, mm	n, U/min
19	18	12	202	31	42	10	67,3 / 27,2
20	27	12	135	32	14	78,1	67,3 / 27,2
21	24	14	135	33	14	78,1	67,3 / 27,2
22	13	14	135	34	20	78,1	47,1 / 19
23	147	8	38,5	35	11	78,1	47,1 / 19
24	32	14	101	36	20	78,1	47,1 / 19
25	43	14	40,8	37	11	78,1	47,1 / 19
26	143	14	3	38	15	78,1	34,5 / 13,9
27	16	20	101 / 40,8	39	15	78,1	34,5 / 13,9
28	24	20	67,3 / 27,2	40	15	78,1	34,5 / 13,9
29	9	10	—	41	15	78,1	34,5 / 13,9
30	24	10	67,3 / 27,2				

GRUE SUR TRAIN A PNEUMATIQUES

Modèle K-102

La grue de 10 t sur train à pneumatiques, modèle K-102, est destinée aux travaux de manutention et de montage.

La flèche normale de la grue a une longueur égale à 10 m. En cas de besoin, à l'aide d'une rallonge de 8 m, elle peut être portée à 18 m.

Pour transbordements avec flèche allongée et portées modérées de charges à grand encombrement et à poids jusqu'à 2 t, la grue est dotée d'un bec recourbé.

La grue modèle K-102 peut fonctionner aussi bien avec un crochet qu'avec une benne preneuse et peut effectuer les opérations suivantes:

a) Montée et descente des charges;
b) Montée et descente de la flèche;
c) Rotation de la flèche de 360°;
d) Déplacement avec charge levée.

PRINCIPALES DONNÉES TECHNIQUES

1. CARACTÉRISTIQUES TECHNIQUES

Flèche de 10 m		Flèche de 18 m	
Charge, t	Portée, m	Charge, t	Portée, m
10	4	7,5	4
8	5	5	6
5	7	3,5	8
3	10	2	12
—	—	1	17

Lors du fonctionnement avec un bec recourbé et flèche de 18 m avec une portée maximum de L_{max} =10 m, la grue peut soulever une charge de Q_{max} =2 t.

FACTEUR DE STABILITÉ MINIMUM

(compte tenu de charges complémentaires)

Avec charge		A vide
Flèche de 10 m	Flèche de 18 m	Flèche de 10 m
1,27	1,28	9,54

2. MOTEUR

Les mécanismes de la grue sont commandés par un moteur Diesel à injection mécanique:

Marque du moteur KJM-46
Puissance nominale . . . . . 80 C.V.
Vitesse de rotation à la puissance nominale . . . . . 835 tr/min

3. VITESSES DE MANOEUVRE

Levée du crochet avec flèche de 10 m . . . . . 19,5 m/min
Levée du crochet avec flèche de 18 m . . . . . 29,25 m/min
Levée de la benne preneuse . . . 58,5 tr/min
Rotation de la grue . . . . . 3,0 tr/min
Durée de variations des portées de la grue (entre les valeurs minimum et maximum) . . . . 45 sec
Déplacement:
a) marche autopropulsée en 1re vitesse . . . . . 2,94 km/heure
b) marche autopropulsée en 2e vitesse . . . . . 7,28 km/heure

4. CARACTÉRISTIQUES DES TREUILS

Diamètre du tambour de charge . . . . 420 mm
Diamètre du tambour de benne preneuse 420 mm
Diamètre du tambour de flèche . . . . 390 mm
Rapport du moufle de levée de la charge (flèche de 10 m) 3
Rapport du moufle de levée de la charge (flèche de 18 m) 2
Rapport du moufle de levée de la flèche 4
Diamètre des poulies des moufles . . . 400 mm

5. FREINS DES MOUVEMENTS

De levée de la charge . . à ruban, commandé
De levée de la benne preneuse . . . . . à ruban, commandé
De levée de la flèche . . . à ruban, constamment en prise
Du mécanisme de rotation . à ruban, commandé
Du mécanisme de déplacement . . . . . à ruban, commandé

6. TRAIN

Voie moyenne des roues:
a) arrière . . . . . 3010 mm
b) avant . . . . . 2900 mm
Diamètre des roues du train . . . . . 1120 mm
Rayon de braquage (intérieur) minimum 8 m
Pente franchissable maximum en marche à vide sur chaussée empierrée . . . 9°12′
Pression maximum sur les roues du train:
a) en utilisation . . . . . 5,5 t
b) en déplacement . . . . . 2,4 t
Nombre de roues du train:
a) roues AV de direction . . . . . 2 paires
b) roues AR motrices . . . . . 4 paires
Pression de gonflage des pneus . . . . 5,6 at

7. COTES D'ENCOMBREMENT (mm)

Empattement du châssis 4050
Ecart maximum entre les centres de roues 4810
Hauteur en ordre de déplacement . . . 4150
Longueur totale en ordre de déplacement (sans flèche) 6864
Largeur maximum de la grue 3710
Rayon de braquage de la plate-forme pivotante 3090

8. POIDS (kg)

Grue avec une flèche de 10 m 27600
Partie pivotante de la grue sans flèche ni crochet 13140
Partie non pivotante de la grue 13185
Flèche de $L = 10$ m avec crochet . . . 1275
Flèche de $L = 18$ m avec crochet . . . 1822

9. CARACTÉRISTIQUES DES CÂBLES METALLIQUES

Destination des câbles	Diamètre du câble, mm	Nombre de torons	Nombre de fils par toron	Type	Résistance à la rupture, kg/mm²	Charge de rupture totale, kg	Longueur du câble, m
Crochet auxiliaire	13,5	6	19	Warrington . . .	150	8800	65
Charge	21	6	19	Warrington . . .	150	23800	60
Flèche	21	6	19	Warrington . . .	150	23800	57
Benne preneuse .	21	6	19	Warrington . . .	150	23800	50

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10. CARACTÉRISTIQUES DES CHAÎNES

Ensemble	Dénominations des chaînes	Nombre de maillons
Moteur КДМ-46	Chaîne à quatre rangées de rouleaux, $t = 19{,}05$ mm, charge de rupture 10000 kg	208
Chariot arrière	Chaîne à une rangée de rouleaux à plaques courbées, $t = 78{,}1$ mm; charge de rupture 30000 kg	4 chaînes de 33 maillons et 2 chaînes de 50 maillons

11. MANCHONS D'ACCOUPLEMENT

Levée de charge . . . . . à ruban, à friction
Levée de benne preneuse . . . . à ruban, à friction
Levée de flèche . . . . . à pignon baladeur
Rotation . . . . . à griffes
Descente de la charge avec le moteur en marche . . . . . à ruban, à friction
Déplacement . . . . . denté
Mise en route du moteur . . . . à disque, à friction
Mécanisme de renversement de marche du treuil de levée de la charge . . . . . conique, à friction
Mécanisme de renversement du sens de rotation et de levée de la flèche . . . . . conique, à friction
Mécanisme de renversement de marche, déplacement . . . . . conique, à friction

SCHÉMA CINÉMATIQUE

PIGNONS ET NOIX

Repères, nos	Z	m ou t, mm	n, tr/min	Repères, nos	Z	m ou t, mm	n, tr/min
1	23	19,05	835	22	13	14	135
2	106	19,05	182	23	147	8	38,5
3	79	8	182	24	32	14	101
4	18	12	182	25	43	14	40,8
5	18	12	182	26	143	14	3
6	27	12	121	27	16	20	101 / 40,8
7	18	10	121	28	24	20	67,3 / 27,2
8	61	10	35,8	29	9	10	—
9	12	14	35,8	30	24	10	67,3 / 27,2
10	12	10	182	31	42	10	67,2 / 27,2
11	vis sans fin à un filet	15	182	32	14	78,1	67,3 / 27,2
12	24	15	7,6	33	14	78,1	67,3 / 27,2
13	28	8	202	34	20	78,1	47,1 / 19
14	63	5	202	35	11	78,1	47,1 / 19
15	15	5	—	36	20	78,1	47,1 / 19
16	33	5	202	37	11	78,1	47,1 / 19
17	71	8	202	38	15	78,1	34,5 / 13,9
18	18	12	202	39	15	78,1	34,5 / 13,9
19	18	12	202	40	15	78,1	34,5 / 13,9
20	27	12	135	41	15	78,1	34,5 / 13,9
21	24	14	135				

Внешторгиздат. Заказ 434/783

ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ «ТЕХНОПРОМИМПОРТ»

МИКРООММЕТР ТИПА М246

STAT

Москва — 1954

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МИКРООММЕТР
типа М246

Измерение малых омических сопротивлений * Число пределов — 5 * Измерение значения сопротивления от 2 микроома до 1 ома * Питание от источника постоянного тока или от сети переменного тока

Микроометр типа М246 является переносным многопредельным прибором, предназначенным для измерения малых омических сопротивлений в цеховых и полевых условиях.

Прибор пригоден для работы при температуре окружающего воздуха от — 40° до + 50°С и относительной влажности до 80%.

Измерительным механизмом прибора является магнитоэлектрический логометр.

Принцип действия магнитоэлектрического прибора для измерения омических сопротивлений основан на зависимости силы тока в цепи от ее сопротивления и при постоянном напряжении источника питания ток, протекающий по рамке магнитоэлектрического прибора, пропорционален измеряемому сопротивлению.

Для исключения зависимости от изменения напряжения в микроомметре типа М246 применен в качестве измерителя магнитоэлектрический логометр.

Логометр представляет собой магнитоэлектрический прибор с двумя скрещенными и жестко связанными рамками.

Прибор не имеет пружинок и подвод тока к подвижной системе осуществляется при помощи безмоментных токоподводов. На рис. 1 показана принципиальная схема логометра микроомметра М246. Одна из рамок логометра включена параллельно эталонному сопротивлению $r_э$, подключенному последовательно с добавочным сопротивлением $r_д$ к источнику питания. Взаимодействие магнитного потока этой рамки с магнитным потоком постоянного магнита создает противодействующий момент прибора, стремящийся вернуть подвижную систему в начальное положение.

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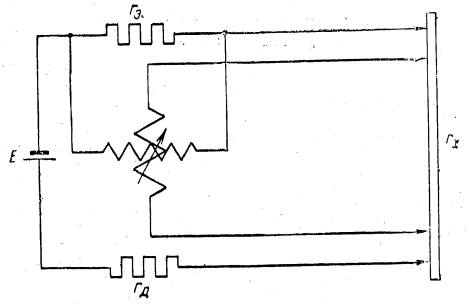

Рис. 1. Принципиальная схема логометра микроомметра М246

Вращающий момент создается второй рамкой логометра, включенной параллельно измеряемому сопротивлению. Ток в этой рамке, перемещающейся в равномерном зазоре, при неизменном значении тока, протекающего по цепи, состоящей из сопротивлений $r_э$, $r_д$ и r_x, пропорционален измеряемому сопротивлению.

Угол поворота системы, определяемый равенством вращающего и противодействующего момента, зависит только от величины измеряемого сопротивления и шкала может быть проградуирована в единицах сопротивления. Изменение напряжения в известных пределах не влияет на показания прибора, так как это изменение одинаково меняет силу тока в обеих рамках.

Подвижная система логометра М246 укреплена на растяжках, что делает прибор высокочувствительным и позволяет измерять малые омические сопротивления при относительно небольших значениях рабочего тока.

Микроомметр типа М246 является многопредельным прибором, что позволяет производить измерение сопротивления на пределе, обеспечивающем максимальную точность измерения.

Прибор имеет 5 пределов измерения.

Пределы измерения, основная погрешность, рабочие токи и время успокоения на разных пределах измерения приведены в таблице.

Предел измерения	0—100 микроом	0—1000 микроом	10 миллиом	100 миллиом	1000 миллиом
Рабочий ток, *а*	20	5	0,5	0,1	0,1
Основная погрешность в % от длины шкалы	3,5	2,0	2,0	2,0	2,0
Время успокоения, *сек.*	6	4	4	4	4

Основная погрешность гарантируется при соблюдении следующих условий:

наружная температура 20° ± 5°С;

положение прибора горизонтальное;

напряжение источника питания номинальное;

отсутствие внешних магнитных полей, кроме земного магнитного поля.

Изменение показаний от изменения напряжения сети переменного тока на 10% от номинального значения и напряжения аккумуляторной батареи на ± 0,5 *в* не превышает 2% от длины шкалы.

Изменения показаний от изменения наружной температуры на каждые 10°С от нормальной не превосходит ± 1% от длины шкалы.

Изменение показаний прибора при наклоне прибора в любую сторону на 5° от горизонтального положения, не превышает 2% от длины шкалы.

Изменение показаний от влияния внешнего магнитного поля напряженностью 5 эрстед, образованного постоянным током или переменным током частотой 50 *гц*, не превышает 0,5% от длины шкалы.

Изоляция между токоведущими частями и корпусом прибора выдерживает в течение одной минуты испытательное напряжение 2000 *в* практически синусоидального тока, частотой 50 *гц*.

Изоляция прибора при нормальной температуре и относительной влажности до 80% — не менее 20 *мгом*.

Шкала прибора имеет 50 делений. Длина шкалы около 120 *мм*. Отсчет по шкале производится при помощи теневой стрелки. Источником света осветителя для теневой стрелки служит лампа накаливания: 2,5 *в* 0,8 *а*.

Питание прибора осуществляется от сети переменного тока напряжением 110—127 или 220 *в* ± 10%, частотой от 50 до 800 *гц* или от аккумулятора напряжения типа 2НКН-60

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напряжением 2,5 *в*. В прибор встроены трансформатор и селеновый выпрямитель, обеспечивающие подачу в измерительную схему прибора и к осветителю постоянного тока с напряжением 2,5 *в*.

На верхней панели прибора М246 размещены переключатель пределов измерения, у основания которого нанесены обозначения пределов измерения, колодка-переключатель,

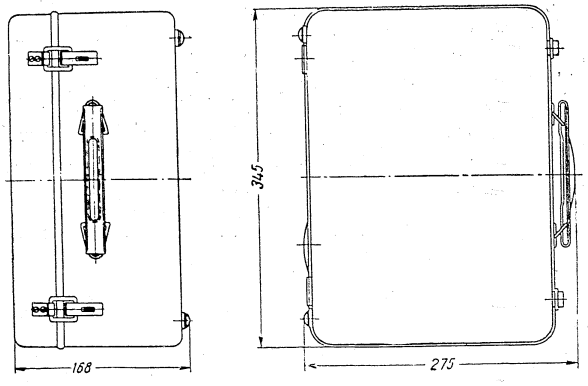

Рис. 2. Габаритные размеры

устанавливаемая в зависимости от рода и напряжения источника питания, два зажима для подключения к аккумуляторной батарее, предохранитель, четыре зажима для подключения токовых и потенциальных проводников, присоединяемых к измеряемому сопротивлению, выключатель для включения тока в измерительную схему и кнопка с надписью реле.

В корпусе прибора встроено поляризованное реле, предназначенное для выключения рабочего тока при неправильном включении. Кнопка с надписью реле служит для возврата реле в рабочее положение.

Корпус прибора — металлический.

Прибор снабжен крышкой, закрывающейся при помощи двух откидных замков, и кожаной ручкой для переноски.

Прибор М246 и принадлежности к нему комплектуются в чемодане.

Габаритные размеры прибора даны на рис. 2.

Вес прибора М246 — 11 *кг*. Вес всего комплекта в чемодане 18 *кг*.

В комплект прибора М246 входит:

1.	Микроомметр типа М246	1 шт.
2.	Чемодан	1 »
3.	Щупы самозачищающиеся типа П7 . .	2 »
4.	Щупы несамозачищающиеся типа П6 .	2 »
5.	Щупы типа П8	2 »
6.	Щупы типа П9	1 »
7.	Шнур питания	1 »
8.	Запасные лампы 2,5 *в* 0,8 *а*	3 »
9.	Запасные предохранители 2 *а*	2 »
10.	Описание и инструкция	1 экз.
11.	Запасные растяжки	3 шт.

Прибор М246 должен храниться в закрытых помещениях при температуре от + 10° до + 35°С с относительной влажностью воздуха от 30 до 80%.

В воздухе не должно быть вредных примесей, вызывающих коррозию.

Гарантийный срок службы прибора при нормальных условиях эксплуатации — 18 месяцев со дня его отправки с завода-изготовителя.

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АККУМУЛЯТОРНАЯ РУЧНАЯ ЛАМПА ЛАУ-4

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АККУМУЛЯТОРНАЯ РУЧНАЯ ЛАМПА ЛАУ-4

Лампа предназначена для местного освещения ограниченных пространств подземных выработок в шахтах, опасных по газу или пыли.

Лампа состоит из головки, корпуса и аккумуляторной батареи.

В головке закреплена шайба коммутатора с патроном и лампочкой накаливания. Лампочка накаливания защищается от механических повреждений шаровым стеклянным колпачком. Кроме того, шаровой колпачок распределяет световой поток лампы для получения максимальной силы света в горизонтальной плоскости на расстоянии 1,5—2,0 *м* от лампы.

Железоникелевая аккумуляторная батарея закрытого неразборного типа 2ШЖН-15-1 напряжением 2,5 *в* состоит из двух последовательно соединенных элементов, которые помещаются в корпус лампы.

Лампочка накаливания наполнена криптоновой смесью. Срок службы лампочки накаливания около 150 часов. Аккумуляторная лампа снабжена магнитным затвором, который открывается в ламповой при помощи электромагнита.

ИЗДА
В СОВЕТ
СОЮ

MINING STORAGE-BATTERY LAMP TYPE ЛАУ-4

Mining storage-battery lamp type ЛАУ-4 is intended for lighting underground works in coal mines dangerous owing to gas or dust.

The lamp consists of three main parts: lid with electric bulb, tank and alkaline storage-battery.

The head is screwed to the tank. For preventing accidental disassembling in the mine the lamp top is furnished with a magnetic lock which can be opened only by a special electro-magnet.

The electric lamp is protected against mechanical shocks and has proper light distribution by means of a global glass hood.

SPECIFICATIONS

Overall dimensions:	
Lamp height	310 mm
Maximum diameter	120 mm
Tank diameter	107 mm
Weight in operating condition (with storage battery and electrolyte)	4.3 kg
Candle power	3.6 cdl.
Incandescent lamp	2.3 V, 1.4 A
Storage-battery type	Alkaline
Storage-battery output	15 A hrs
Continuous lighting duration	10 hrs
Electrolyte — caustic soda (NaOH) solution with a density of 1.17—1.19 with added lithium monohydrate in a quantity of 10 g for one litre of electrolyte.	

VSESOJUZNOJE OBJEDINENIJE
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ТЕХНИЧЕСКАЯ ХАРАКТЕРИСТИКА

Вес лампы, *кг*	4,3
Батарея:	
тип	2ШЖН-15-1
напряжение, *в*	2,5
емкость, *а-ч*	1,5
зарядный ток, *а*	4,3
Лампочка накаливания:	
напряжение, *в*	2,4
ток, *а*	1,5
световой поток, *лм*	31
Продолжительность непрерывного горения лампочки накаливания, час.	10
Высота лампы без крючка, *мм*	310
Наибольший диаметр корпуса, *мм*	120

ИЗДАНО
В СОВЕТСКОМ
СОЮЗЕ

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ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

МАШИНОЭКСПОРТ

СССР. МОСКВА

●

ТЕЛЕГРАФНЫЙ АДРЕС
МОСКВА МАШИНОЭКСПОРТ

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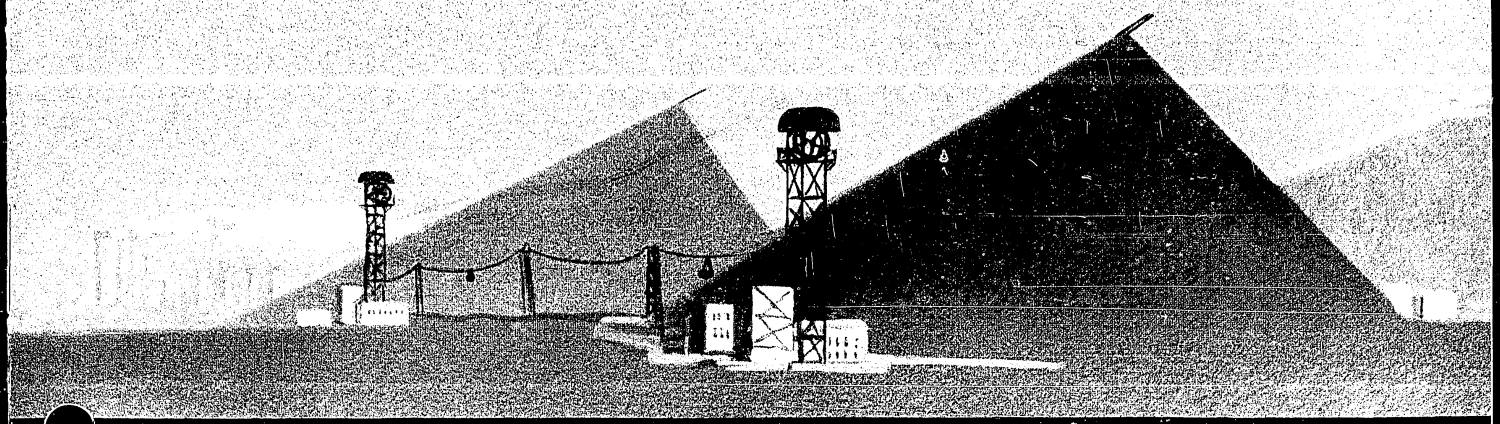
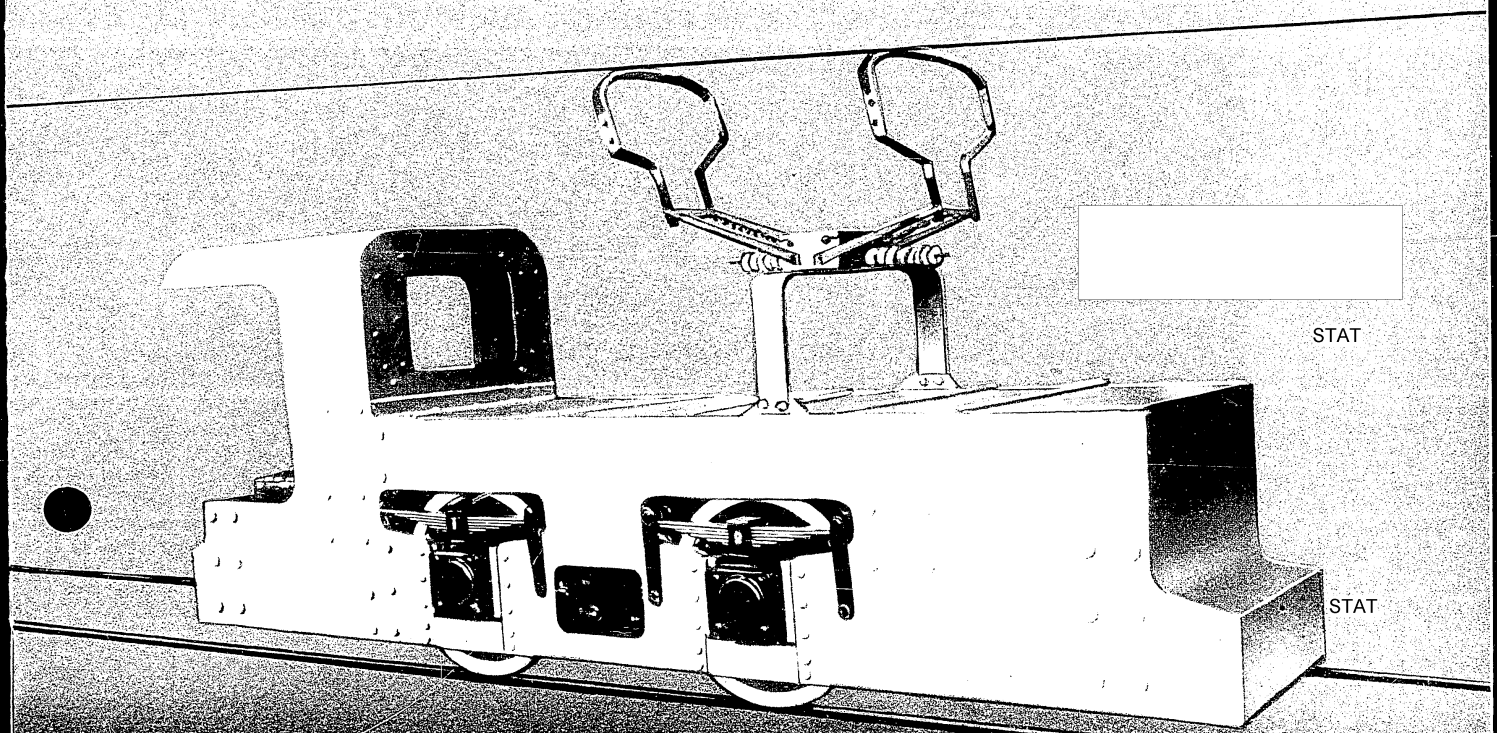


ЭЛЕКТРООБОРУДОВАНИЕ РУДНИЧНОГО ЭЛЕКТРОВОЗА



STAT

STAT

ПТР-2Д ПТР-3Д

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ТЯГОВОЕ ЭЛЕКТРООБОРУДОВАНИЕ РУДНИЧНОГО ЭЛЕКТРОВОЗА 1ТР-2Д и 1ТР-3Д

ОБЩИЕ СВЕДЕНИЯ

Рудничные троллейные электровозы типов 1ТР-2Д и 1ТР-3Д сцепным весом 7 *т* работают от контактной сети с напряжением 250 *в* постоянного тока.

Электровоз представляет собою конструкцию рамного типа, выполненную из массивных стальных листов, связанных между собою литыми чугунными поперечными буферными брусьями. Колесные буксы снабжены роликовыми коническими подшипниками. Электровоз имеет две оси (обе ведущие). Каждая ось электровоза приводится отдельным электродвигателем, имеющим подвеску трамвайного типа и связанным с осью одноступенчатой цилиндрической передачей.

Управление электровозом производится при помощи силового кулачкового контроллера. Токосъем осуществляется двухдужным токоприемником, установленным на скобах на раме электровоза. Силовая цепь электровоза защищена максимальным автоматом с ручным приводом.

Электровоз снабжен колодочно-бандажным тормозом с ручным маховичковым приводом и имеет также электрическое реостатное торможение, осуществляемое кулачковым контроллером.

ОСНОВНЫЕ ПРОЕКТНЫЕ ДАННЫЕ ЭЛЕКТРОВОЗА

Полный вес (он же сцепной)	около 7 *т*
Число осей	2
Число ведущих осей	2
Давление на ось	3,5 *т*
Диаметр колеса	650 *мм*
Передаточное число от двигателя к колесной паре	90 : 13 = 6,92
База	1 100 *мм*
Число двигателей	2
Мощность двигателя (часовая)	20,6 *квт*
Скорость электровоза (часовая)	около 10,5 *км/час*
Колея — 1 ТР-2Д	550, 575, 600 *мм*
1 ТР-3Д	750, 900 *мм*

ТЯГОВЫЙ ДВИГАТЕЛЬ ТИПА ДК-801А-1

Двигатель — невентилируемый закрытого типа с сериесным возбуждением, четырехполюсный без добавочных полюсов. Остов двигателя — стальной коробчатого типа. Он имеет разъемные буксы для установки на оси колесной пары и ушки для крепления пружинной подвески. Вкладыши букс — разъемные бронзовые.

Двигатель имеет два щеткодержателя.

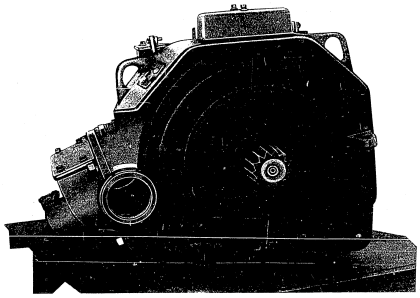

Рис. 1. Тяговый двигатель ДК-801.

ТЕХНИЧЕСКИЕ ДАННЫЕ ДВИГАТЕЛЯ ДК-801А-1

Напряжение	250 *в*
Мощность (часовая)	20,6 *квт*
Число оборотов часового режима	600 *об/мин*
Ток часового режима	95 *а*
Вес двигателя	около 525 *кг*
Подшипник со стороны коллектора однорядный шариковый	кат. № 310
Подшипник со стороны привода роликовый	кат. № 32 413

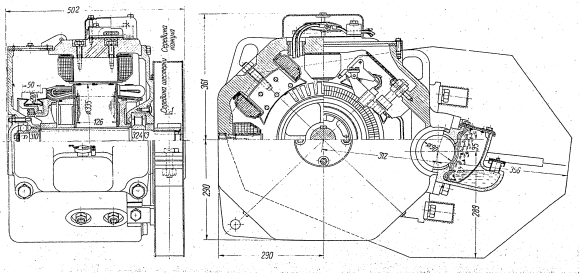

Рис. 2. Общий вид тягового двигателя ДК-801.

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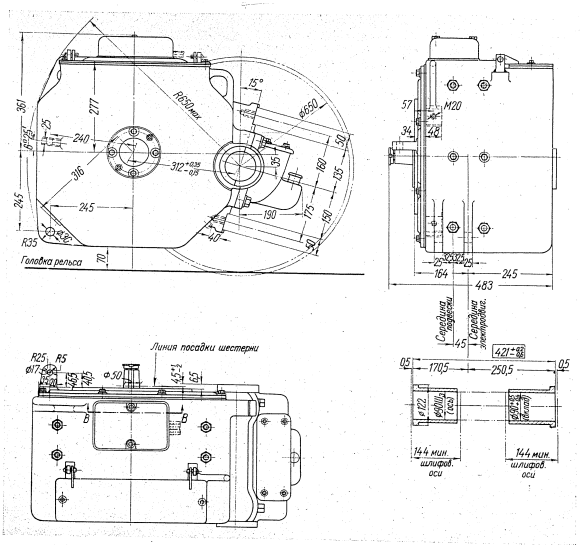

Рис. 3. Габаритные размеры тягового двигателя ДК-801.

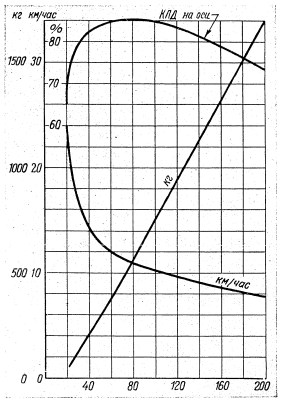

Рис. 4. Характеристика двигателя ДК-801 по расчету.

КОНТРОЛЛЕР ТИПА МТ-1Б

Контроллер предназначен для пуска тяговых двигателей, регулирования их скорости и изменения направления вращения. Кроме того, с помощью контроллера осуществляется переключение схемы, необходимое для получения электрического реостатного торможения, а также отключение аварийного двигателя.

Корпус контроллера состоит из литого чугунного дна и такой же крышки, соединенных между собой вертикальными стальными стойками.

Контроллер имеет два вала: главный и реверсивный. Главный вал — кулачковый, с прессованными из изоляционного материала шайбами, приводится в движение главной рукояткой контроллера и управляет включением и выключением 11 контактных кулачковых элементов. Элементы смонтированы на изоляционных основаниях и снабжены индивидуальными электромагнитными дугогасительными устройствами.

Контакты элемента нормально включены под действием пружины и выключаются при воздействии на ролик элемента кулачковой шайбы. Эти контакты осуществляют включение и выключение двигателей, закорачивание пусковых сопротивлений и переключение двигателей с сериесного на параллельное соединение.

Главный вал имеет восемь позиций, кроме нулевой. Реверсивный вал контроллера имеет контактный барабан с медными контактными сегментами, закрепленными на изоляционном барабане.

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К сегментам прижимаются пружинные пальцы с контактными сухарями. Реверсивный вал приводится в движение съемной реверсивной рукояткой. Рукоятка имеет семь позиций (схема рис. 11): нулевую, при которой силовая цепь разомкнута, положение «вперед» (3 позиции) и «назад» (3 позиции) с обоими включенными или с одним отключенным двигателем.

Главный и реверсивный вал механически сблокированы между собой так, что реверсивный вал можно повернуть только в случае, когда главный вал установлен в нулевое положение. Это исключает возможность переключения реверсивного барабана под током, на что он не рассчитан.

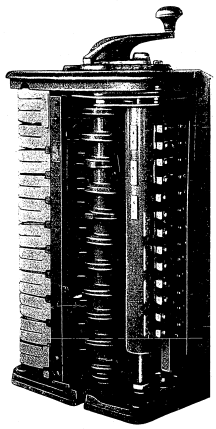

Рис. 5. Контроллер МТ-1.

ТЕХНИЧЕСКИЕ ДАННЫЕ КОНТРОЛЛЕРА МТ-1Б

Напряжение ..... 250 *в*
Ток (длительный) ..... 100 *а*

АВТОМАТИЧЕСКИЙ ВЫКЛЮЧАТЕЛЬ (МАКСИМАЛЬНЫЙ АВТОМАТ) ТИПА АВ-1Б2

Автоматический выключатель типа АВ-1Б2 предназначен для автоматического выключения цепи при увеличении тока свыше определенного, установленного регулировкой предела. Включение автомата производится вручную.

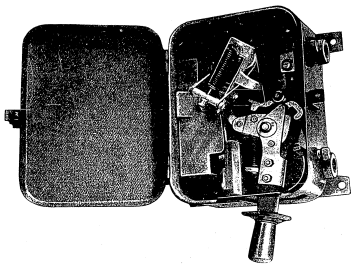

Рис. 6. Автоматический выключатель АВ-1Б2.

Все детали автомата установлены на изоляционном основании и заключены в металлический кожух.

При включении рукоятки контакты замыкаются и после отпускания рукоятки удерживаются защелкой в замкнутом состоянии.

В случае возрастания тока в силовой цепи электровоза свыше определенного предела катушка автомата, включенная последовательно в эту цепь, притягивает якорь. Якорь освобождает защелку, удерживающую главные контакты, и происходит размыкание под действием пружины.

Автомат помещен в кабине под сидением машиниста.

ТЕХНИЧЕСКИЕ ДАННЫЕ МАКСИМАЛЬНОГО АВТОМАТА АВ-1Б2

Напряжение ..... 250 *в*
Ток (длительный) ..... 140 *а*
Ток срабатывания (уставка) ..... 350 *а*

ПУСКОВОЕ И ТОРМОЗНОЕ СОПРОТИВЛЕНИЕ ТИПА КЛ-2Б

Сопротивление состоит из девяти элементов типа КФ. Элементы установлены между подвесными скобами в три ряда на изолированных шпильках.

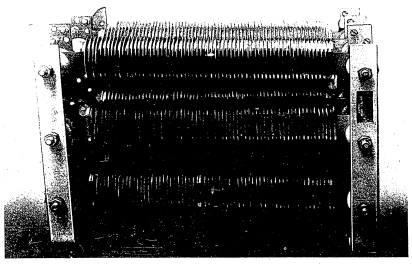

Рис. 7. Пусковое и тормозное сопротивление КЛ-2Б.

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Элемент *КФ*, имеющий форму цилиндра круглого сечения, изготовлен из фехралевой ленты, намотанной (на ребро) на фарфоровые изоляторы.

В ящике имеются четыре секции, т. е. пять выводов.

Сопротивление помещено в кузове электровоза.

ТЕХНИЧЕСКИЕ ДАННЫЕ СОПРОТИВЛЕНИЙ КЛ-2Б2

Напряжение	250 *в*
Ток (длительный) на 1-й позиции контроллера	60 *а*

ТОКОПРИЕМНИК ТИПА ДГ-11А

Токоприемник состоит из двух независимых контактных дужек, смонтированных на общем основании. Каждая дужка имеет два шарнира, позволяющие ей под действием пружин легко следовать за изменениями высоты контактного провода при обоих направлениях движения. Контактная часть токоприемника выполнена в виде легкой алюминиевой отливки желобчатой формы, в которую заложена сменная вставка из круглого медного прутка. Подъем дужек токоприемника осуществляется пружинами; опускание — вручную, при помощи веревок, перекинутых через блоки.

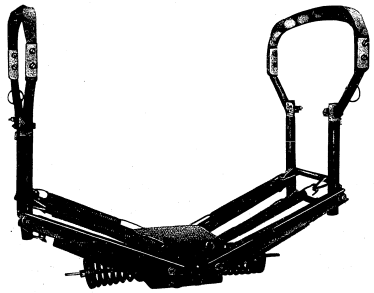

Рис. 8. Токоприемник ДГ-11А.

ТЕХНИЧЕСКИЕ ДАННЫЕ ТОКОПРИЕМНИКА ДГ-11А

Напряжение	250 *в*
Ток (длительный)	100 *а*
Допустимый рабочий диапазон колебания высоты контактного провода	350 *мм*
Предельный диапазон колебания высоты контактного провода	400 *мм*
Нажатие на контактный провод	6 *кг*

ВЫКЛЮЧАТЕЛЬ ТИПА ВУ-7Б

Выключатель находится в цепи освещения электровоза. Он представляет собой ручной однополюсный выключатель,снабженный электромагнитным дугогашением. В выключателе смонтирован также плавкий предохранитель трубчатого типа.

Выключатель с предохранителем заключен в корпус, изготовленный из пластмассы.

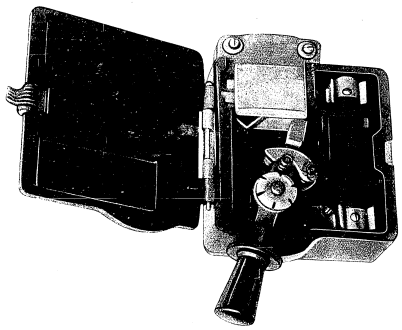

Рис. 9. Выключатель ВУ-7Б.

ТЕХНИЧЕСКИЕ ДАННЫЕ ВЫКЛЮЧАТЕЛЯ ВУ-7Б

Напряжение	250 *в*
Ток (длительный)	6 *а*
Предохранитель	6 *а*

ЩИТОК С СОПРОТИВЛЕНИЯМИ ТИПА ЯС-23А1

Сопротивления включены в цепь освещения электровоза. В металлическом ящике сопротивления со съемным кожухом установлена асбоцементная доска, на которой смонтировано шесть цилиндрических трубчатых сопротивлений типа ТС.

Рис. 10. Трубчатое сопротивление ТС.

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Сопротивления типа ТС намотаны из фехралевой проволоки на фарфоровые трубки и покрыты снаружи стекловидной жаростойкой эмалью, предохраняющей витки сопротивления от сдвигов, замыканий и механических повреждений.

ТЕХНИЧЕСКИЕ ДАННЫЕ ЩИТКА С СОПРОТИВЛЕНИЯМИ ЯС

Напряжение ..... 250 *в*
Ток (длительный) ..... 0,5 *а*

ЭЛЕКТРИЧЕСКАЯ СХЕМА ЭЛЕКТРОВОЗА

Электрическая схема электровоза предусматривает следующие режимы езды:

1. Пуск на сериесном соединении двигателей.
2. Езда на сериесном соединении двигателей.
3. Пуск на параллельном соединении двигателей.
4. Езда на параллельном соединении двигателей.
5. Выбег.
6. Электрическое реостатное торможение при перекрестном соединении двигателей.

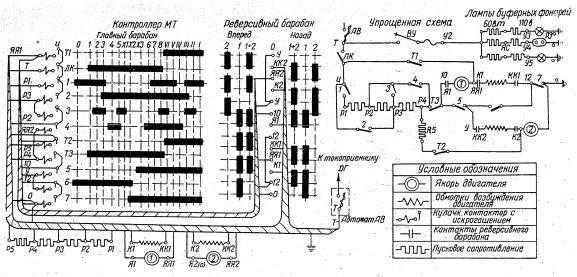

Рис. 11. Схема электровоза.

Осуществление этих режимов производится при помощи контроллера МТ-1Б и пускотормозных сопротивлений КЛ-2Б-2.

При переводе главной рукоятки контроллера с нулевого положения на первое (при включенном максимальном автомате) и реверсивной рукоятке, поставленной на ходовое положение, — контактные элементы *ЛК*, *1* и *6* контроллера замыкаются и включают оба двигателя последовательно с полностью введенным сопротивлением на сеть. На последующих позициях контроллера выводятся одна за другой секции пускового сопротивления. На пятой позиции оба двигателя, соединенные последовательно, включены непосредственно на полное напряжение сети.

При дальнейшем продвижении рукоятки контроллера происходит переключение двигателей с последовательного на параллельное соединение и на шестой позиции оба двигателя включены в параллель между собой и последовательно с частью пускового сопротивления. На седьмой и восьмой позициях эти сопротивления закорачиваются и на восьмой позиции осуществляется езда с параллельно включенными двигателями при полностью выведенном сопротивлении.

При установке главной рукоятки контроллера на нулевое положение силовая цепь размыкается.

При необходимости получить электрическое реостатное торможение главная рукоятка контроллера сбрасывается на нулевое положение и затем постепенно переводится на первую, вторую и т. д. тормозные позиции, регулируя таким образом величину сопротивления в тормозном контуре и тем самым — интенсивность торможения. Особая перекрестная схема включения двигателей позволяет осуществить устойчивое реостатное торможение при минимальном количестве дополнительных контактных соединений.

Данные сопротивлений	
Ступень	Сопротивление
Р1—Р2	0,687
Р2—Р3	1,374
Р3—Р4	1,374
Р4—Р5	0,458

ТАБЛИЦА ЗАМЫКАНИЙ КОНТАКТОРОВ

Поз.	Контакторы										Сопротивления
	ЛК	1	2	3	4	5	6	7	T_1	T_2	T_3	
0		1					6					
1	*ЛК*	1					6				T_3	3,435
2	*ЛК*	1		3			6				T_3	2,061
3	*ЛК*	1	2	3			6				T_3	1,374
4	*ЛК*		2		4		6				T_3	0,687
5	*ЛК*		2	3	4		6				T_3	0
X1	*ЛК*		2	3			6				T_3	1,374
X2	*ЛК*		2				6	7			T_3	1,374
X3	*ЛК*		2			5		7			T_3	1,374
6	*ЛК*		2		4	5		7			T_3	0,687
7	*ЛК*	1	2		4	5		7			T_3	0,343
8	*ЛК*	1	2	3	4	5		7			T_3	0
VI		1	2	3	4	5		7	T_1	T_2		0,458
V		1	2		4	5		7	T_1	T_2		0,801
IV			2		4	5		7	T_1	T_2		1,142
III		1	2	3		5		7	T_1	T_2		1,832
II		1		3		5		7	T_1	T_2		2,519
I		1				5		7	T_1	T_2		3,893

Заказ № 208 Внешторгиздат Издано в Советском Союзе

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ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

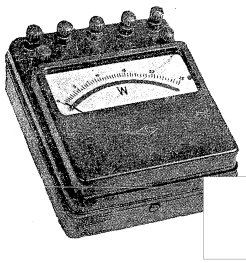
«МАШИНОИМПОРТ»

ЭКСПОРТИРУЕТ И ИМПОРТИРУЕТ:

СВАРОЧНОЕ ЭЛЕКТРООБОРУДОВАНИЕ
КРАНОВОЕ ЭЛЕКТРООБОРУДОВАНИЕ
ПЕРЕДВИЖНЫЕ ЭЛЕКТРОСТАНЦИИ
ТЯГОВОЕ ЭЛЕКТРООБОРУДОВАНИЕ
ВЫСОКОЧАСТОТНЫЕ УСТАНОВКИ
ВЫСОКОВОЛЬТНУЮ АППАРАТУРУ
НИЗКОВОЛЬТНУЮ АППАРАТУРУ
РЕНТГЕНОВСКИЕ УСТАНОВКИ
ЭЛЕКТРИЧЕСКИЕ МАШИНЫ
РТУТНЫЕ ВЫПРЯМИТЕЛИ
ТРАНСФОРМАТОРЫ
РЕЛЕ ЗАЩИТЫ
ЭЛЕКТРОВОЗЫ
ЭЛЕКТРОПЕЧИ

ТЕЛЕГРАФНЫЙ АДРЕС: МОСКВА,
МАШИНОИМПОРТ

WATTMETER
ELECTRODYNAMOMETER
Type Д-50



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VSESOJUZNOJE OBJEDINENIJE "TECHNOPROMIMPORT"

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WATTMETER WITH DYNAMOMETER ELEMENTS
Type Д-50

Three-phase alternating current; Frequency 500 or 1000 c.p.s.;
Accuracy class 1 and 1.5

Type Д-50 Wattmeters, of the electrodynamometer type, are designed to measure active power in three-phase alternating current circuits of 500 c.p.s or 1000 c.p.s. frequency. They can be used at ambient air temperatures from —15° to +35°C (and at a relative humidity not exceeding 95%.

The measuring unit of this Meter works on the electrodynamometer principle and consists of two moving coils and two fixed coils. Both of the moving coils are mounted on the spindle of the measuring element and placed in the fixed coils.

Currents flowing through the coils create magnetic fields which react to develop a torque proportional to the current and the voltage. This torque causes the pointer to move over the scale and assume a position proportional to the power. Proper connection of the moving and fixed coils to a three-phase circuit makes it possible to take direct readings of the power flowing in the circuit.

These wattmeters are available for one range of power measurement, at one frequency and for one voltage. They are available for voltages of 36, 127 or 220 volts at a frequency of 500 or 1000 c.p.s.

POWER RANGES AND SERIES CIRCUIT VOLTAGE-DROP

Range upper limit, watts	36 volts		127 volts		220 volts	
	500 c.p.s.	1000 c.p.s.	500 c.p.s.	1000 c.p.s.	500 c.p.s.	1000 c.p.s.
	Voltage drop in series circuit, volts					
25	2.0	3.5	4.7	4.7	10.0	10.0
50	1.0	2.0	4.4	3.0	10.0	10.0
150	0.2	1.0	1.5	2.7	2.6	4.5
250	0.3	0.5	0.8	1.3	1.5	2.6
500	0.2	0.3	0.4	0.8	0.9	1.5

Meters for use on 500 c.p.s. circuits are in the unit (1) accuracy class. Meters for use on 1000 c.p.s. circuits are of the 1.5 accuracy class.

500-c.p.s. Meters are accurate to ±1% and 1000-c.p.s. Meters are accurate to 1.5%, provided the following conditions are observed:

1. The Meter is placed in a horizontal position.
2. The ambient air temperature is +20° ±5°C.
3. Stray magnetic fields are absent, not including earth magnetism.
4. The frequency corresponds to the rated value.
5. Power factor is unity.

A change of ten degrees in temperature, from the nominal value of the ambient air temperature, will not introduce an error in excess of 1% for a 500-c.p.s. Meter, and of 1.5% for 1000-c.p.s. Meters of full scale value.

A ten percent change in nominal frequency will not introduce an error in excess of 1% for 500-c.p.s. Meters and of 1.5% for 1000-c.p.s. Meters. Stray magnetic fields of five oersteds field strength will not cause errors exceeding 3% of a reading corresponding to 75% of full scale value.

Readings taken under nominal conditions of current, voltage and frequency for 0.5 power factor loads should not introduce a difference in readings exceeding 1% for 500-c.p.s. Meters and 1.5% for 1000-c.p.s. Meters when compared with readings obtained under conditions of nominal voltage, nominal frequency, and 50% nominal current at a unity power factor. Inclining the Meter out of the horizontal position through an angle of ten degrees will not cause errors exceeding 1% (for 500-c.p.s. Meters) and 1.5% (for 1000-c.p.s. Meters) of full scale value.

The circuit will withstand a long duration 120% nominal current or voltage. The Meter can withstand 5 overcurrent shocks of twice nominal current for 0.5 sec. at 15 sec. intervals.

The insulation between the current-carrying parts and the body of the Meter withstands a one-minute, practically sinusoidal, 50 c.p.s., 2000-volt test voltage.

The insulation between the series circuit and the potential circuit withstands a 600-volt test voltage.

WATTMETER DESIGN FEATURES

The Meter is mounted in a plastics casing. The scale is provided with a metal mirror to eliminate parallax errors. The elements are of a static construction to exclude the influence of a uniform magnetic field. The mechanism of the Meter is also provided with shielding to eliminate the effect of non-uniform magnetic fields.

Air damping is provided. Damping time is within 4 sec.

Bearings are spring supported to protect spindles and bearings from injury during transportation.

External resistors as well as the condensers used for frequency variation compensation are mounted within the casing of the Meter.

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Zero correction is provided. Seven terminals are brought out on the upper part of the Meter. They have non-removable nuts.

The Meter is shipped in a special case.

Overall dimensions of the Wattmeter: 192×232×117 mm.

Overall dimensions of case complete with Wattmeter, 250×300×150 mm.

Weight of Wattmeter, 3.5 kg.

Weight of case complete with Wattmeter, 5.0 kg.

Wattmeters are shipped with instruction sheets.

Type Д-50 Wattmeters should be stored in closed rooms where the ambient air temperature is within limits of +10° to +35°C and relative humidity does not exceed 80%. The atmosphere in the room must not be corrosive.

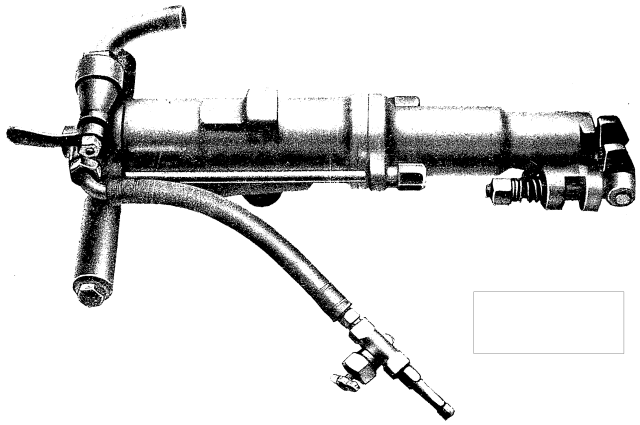
These Wattmeters are guaranteed for 18 months from date of shipment from the Works, provided they are stored and used under normal conditions.

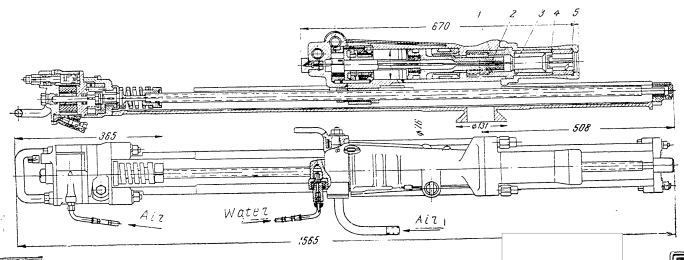
Vneshtorgizdat. Order № 2339

Модель
КЦМ-4

120413

ПЕРФОРАТОР КОЛОНКОВЫЙ





COLUMN DRILL

STAT
STAT

ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

МАШИНОЭКСПОРТ

СССР МОСКВА

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Модель

КЦМ-4

ПЕРФОРАТОР КОЛОНКОВЫЙ

Перфоратор колонковый модели КЦМ-4 ударно-поворотного действия предназначен для бурения горизонтальных выработок.

При работе перфоратор крепится на колонке и имеет специальный пневмоподатчик для подачи и вытаскивания бура.

Перфоратор надежно и производительно работает в породах крепостью 12 по шкале проф. Протодьяконова.

Буровая мелочь для предупреждения образования пыли в забое удаляется из шпура продувкой сжатым воздухом и непрерывным смачиванием водой.

Мощность перфоратора—4,0 л. с. Перфоратор колонковый весит 38 кг.

КОНСТРУКЦИЯ И СХЕМА РАБОТЫ ПЕРФОРАТОРА

Перфоратор колонковый модели КЦМ-4 представляет собой пневматический агрегат, в котором помещенный в цилиндр 1 поршень-ударник 2 под действием попеременно поступающего в верхнюю и нижнюю части цилиндра сжатого воздуха совершает поступательно-возвратные движения. При движении вверх (рабочий ход) поршень-ударник наносит удар по бойку 3, который в свою очередь передает удар на хвостовик штанги бура 4, вставленного в ведущий патрон 5 перфоратора. При движении вниз (обратный ход) поршень-ударник, а вместе с ним боек и бур, с помощью храпового механизма поворачивается на некоторый угол.

Перфоратор колонковый состоит из следующих основных узлов:

1. цилиндра с клапанным механизмом и механизмом поворачивания бура;
2. крышки с дроссельным клапаном и с трубопроводами для подвода воды и сжатого воздуха;
3. корпуса бурильного молотка с державкой бура и направляющими патронами хвостовика.

COLUMN DRILL

The model КЦМ-4 Column Drill of percussion-swinging action is designed for drilling horizontal drivings.

When operating the Drill is fastened on the column, and has a special air power feed for drill feeding and drawing.

The Drill may safely and efficiently operate in formations of hardness to Protodyakonov scale 12.

To prevent the formation of dust the drillings are removed from the shot holes by blowing with compressed air and continuous watering.

The Column Drill has a 4,0 h. p. capacity. It weighs 38 kg.

DESIGN AND OPERATION OF DRILL

The model КЦМ-4 Column Drill is a pneumatical unit in which the piston-striker 2 placed in the cylinder 1 accomplishes reciprocating motions under action of intermittently supplied compressed air into cylinder upper and lower sections. When moving upwards (working stroke) the piston-striker delivers impacts upon the drill anvil block 3 which in its turn imparts impact upon the drill rod shank 4 inserted in the Drill chuck bare 5. When moving downwards (reverse stroke) the piston-striker, together with the anvil block and drill revolves to a certain angle by means of a ratchet mechanism.

The Column Drill consists of the following main assemblies:

1. cylinder with valve mechanism and mechanism of drill rotation;
2. cover with throttle valve and pipe lines for water and compressed air feed;
3. housing of drill with drill stand and shank chuck bares.

The drop-forged cylinder of the Column Drill has a cylindrical through opening, which forms the valve and piston recess of cylinder.

VSESOJUZNOJE OBJEDINENIJE
MACHINOEXPORT
USSR MOSCOW

Модель

КЦМ-4

Штампованный цилиндр перфоратора имеет сквозное цилиндрическое отверстие, образующее клапанную и поршневую полости цилиндра.

В средней части, в приливе, цилиндра имеется отверстие, в котором смонтирован продувочный клапан. В теле цилиндра имеется ряд отверстий для направления сжатого воздуха и смазки.

В верхней, клапанной, полости цилиндра смонтированы: шайба цилиндра, прокладное кольцо, направляющая клапана с клапаном, образующие клапанную коробку, при помощи которой происходит распределение воздуха в перфораторе.

На направляющей клапана смонтирован храповик, геликоидальный стержень с двумя собачками.

Храповик, направляющая клапана и прокладное кольцо цилиндра закреплены от проворачивания штифтом.

С верхней торцевой стороны цилиндр закрывается крышкой. В нижней цилиндрической части смонтированы поршень с гайкой геликоидального стержня. В нижней части цилиндра имеется отверстие, закрытое пробкой, для наполнения резервуара смазочным маслом.

Крышка штампованной конструкции снабжена отверстиями, в которых монтируется рукоятка, дроссельный клапан с трубопроводом для подвода сжатого воздуха, соединительная трубка со шлангом подвода воды для промывки шпура.

Штампованный корпус имеет сквозное цилиндрическое отверстие, в котором смонтированы ведущий патрон и патрон хвостовика, соединенные между собой по торцам с помощью зубьев.

Крышка, цилиндр и корпус соединены стяжными болтами с гайками.

In the middle section in the cylinder boss there is an opening in which the blowing valve is mounted. In the cylinder housing there is a row of holes for the direction of compressed air and lubricaat.

In the upper valve recess of the cylinder there are mounted the cylinder washer, a distance ring, valve guide with valve forming the valve chest by means of which the air is distributed in the Column Drill.

The ratchet and helical rod with two pawls are mounted on the valve guide.

The ratchet, valve guide, and distance ring of the cylinder are fixed by a dowel pin from turning.

On the upper face side the cylinder is closed by a cover. The piston with the helical rod nut are mounted in the lower cylindrical section. In the lower section of the cylinder there is an opening closed with a plug for filling the tank with lubricating oil.

The cover, of drop-forged design, is furnished with openings in which are installed the handle, throttle valve with pipe line for compressed air feed, and a connecting tube with water hose for shot hole flushing.

The drop-forged housing has a cylindrical through opening in which are mounted the drill chuck bare and shank chuck joined along faces by means of teeth.

The cover, cylinder and housing are connected by coupling bolts with nuts.

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Модель

КЦМ-4

ОСНОВНЫЕ ДАННЫЕ	
Мощность	4 л.с.
Число ударов поршня	1800 ударов в минуту
Число оборотов бура	200 об/мин.
Расход воздуха	3 м³/мин
Сила удара поршня	7—8 кг
Скорость бурения породы с твердостью по шкале проф. Протодьяконова 12	275 мм/мин
Длина хода подачи	850 мм
Диаметр буровой стали	32 мм
Длина перфоратора	1565 мм
Вес перфоратора	38 кг
Вес перфоратора с пневмоподатчиком и салазками	82 кг

ОБЪЕМ ПОСТАВКИ	
Перфоратор колонковый с пневмоподатчиком	1 компл.
Автомасленка	1 шт.
Кран водяной	1 шт.
Запасные части	1 компл.

MAIN SPECIFICATIONS	
Power output	4 h.p.
Number of piston strokes	1800 strokes per min
Speed of drill	200 r.p.m.
Air consumption	3 cu m per min
Impact energy of piston	7—8 kg
Speed of drilling formations with hardness to Protodyakonov scale 12	275 mm per min
Feed stroke length	850 mm
Diameter of drill steel	32 mm
Length of Drill	1565 mm
Weight of Drill	38 kg
Weight of Drill with air power feed and slides	82 kg

DELIVERY INCLUDES	
Column Drill with air power feed	1 set
Automatic oiler	1 piece
Water valve	1 piece
Spare parts	1 set

Внешторгиздат. Заказ № 959/1326

VSESOJUZNOJE OBJEDINENIJE
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USSR MOSCOW

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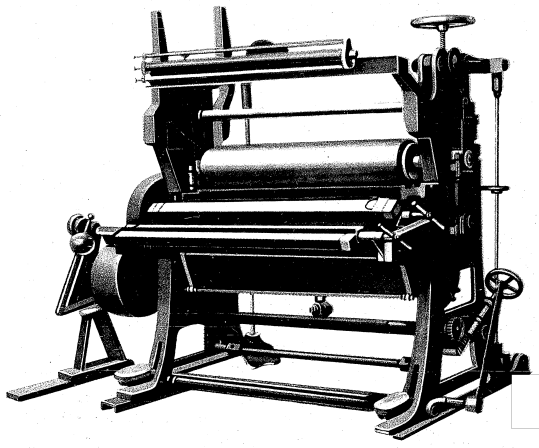
ПЛЮСОВКА ДВУХВАЛЬНАЯ ПД-110



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МАШИНОЭКСПОРТ
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ПД-110

ПЛЮСОВКА ДВУХВАЛЬНАЯ

Плюсовка предназначена для кислотного крашения, апретирования и жидкостной пропитки тканей в расправленном состоянии.

Плюсовка состоит из ванны, отжимной пары, двойной грузовой рычажной системы, подъемного механизма для изменения расстояния между валами и заправочного устройства. На дне ванны имеются два направляющих ролика и змеевик. Имеется специальный механизм для опускания и подъема ванны в зависимости от величины необходимого погружения валов. Прижим валов – рычажный с грузами.

Заправку ткани можно производить двумя способами. При первом способе ванна поднята настолько, что нижний отжимной вал погружается в ванну, ткань пропускается непосредственно в жало валов и смачивается только с одной стороны нижним валом. При втором способе ванна опущена, и нижний отжимной вал не касается раствора; ткань проводится сначала в ванну с раствором, где обходит два ролика, а затем направляется в жало валов. При том и другом способе заправки ткань из жала валов направляется на следующую машину или на соответствующее выборочное устройство. Привод плюсовки осуществлен через ременную передачу с коническими шкивами и пару цилиндрических шестерен от машины, входящей в агрегат.

ТЕХНИЧЕСКАЯ ХАРАКТЕРИСТИКА

Скорость движения в м/мин	до 85
Рабочая ширина в мм	1100
Диаметры валов в мм:	
ведущего нижнего	300
ведомого верхнего	250
Высота подъема ванны в мм	80
Разводка валов в мм	2
Нагрузка в жале валов в кг/см	20
Потребляемая мощность в квт.	2,5–3
Габаритные размеры в мм:	
длина	2235
ширина	2795
высота	2120
Вес в кг	около 2000

TWO-BOWL PADDING MACHINE

This Padding Machine is intended for acid dying, finishing and liquid saturation of cloth in open-width state.

The Padding Machine consists of a trough, two bowls, a twin weight and lever type squeezing system, a lifting arrangement for adjusting the distance between bowls and feeding arrangement. At the bottom of the trough there are two guiding rollers and a heating coil. The machine incorporates a special device for lowering and lifting of the trough accordingly to the required immersion depth of the bowl.

The cloth may be threaded up by two methods. The first method provides for the trough to be lifted so that the bottom bowl be immersed into the trough; the cloth is then led directly into the nip, and is moistened but at one side. According to the second method the trough is lowered and the bowl does not touch the solution; the cloth first passes the trough filled with the solution and then runs around two rollers into the bowl nip. Both ways of threading make the cloth run from the nip into the next machine or into the corresponding take-out motion.

This Padding Machine is driven by a belt on cone pulleys, and a pair of wheels from an engine incorporated into the unit.

SPECIFICATIONS

Cloth speed	up to 85 m/min
Working width	1100 mm
Diameter of the:	
driving bottom bowl	300 mm
driven upper bowl	250 mm
Lift of the trough	80 mm
Reach of the bowls	2 mm
Pressure in the bowl nip	20 kg/cm
Power required	2.5–3 kW
Overall dimensions:	
length	2235 mm
width	2795 mm
height	2120 mm
Weight	approx. 2000 kg

CABLE ADDRESS: MACHINOEXPORT MOSCOW

ТЕЛЕГРАФНЫЙ АДРЕС:

МОСКВА МАШИНОЭКСПОРТ

Внешторгиздат. Заказ № 264

120508

BALL MILL WITH CONTINUOUS DISCHARGE 417×445

Model 52-МЛ

The Model 52-МЛ Ball Mill with Continuous Discharge is designed for fine crushing of material and ores in open and closed circuits. The crushing process is fulfilled as a rule in liquid medium — with water.

The Ball Mill with Continuous Discharge having dimensions of 417×445 mm is an apparatus consisting of a frame, drive and drum with toothing, belts and a screw feeder.

Crushing is carried out in the rotating drum of the Mill, the drum being loaded with balls. Material falling between the mill lining and balls is crushed and ground. The capacity of the Mill is equal to 70 kg per hour.

DESCRIPTION OF DESIGN

The Mill consists of two main parts: the frame and drive and the mill casing.

The frame represents a skeleton of channel bars with a steel plate welded to it forming a platform. On the platform are mounted the bearing unit with rolls, on which the mill casing rotates and the drive bearing unit with a gear and drive sheave.

The cylindrical casing of the Mill is made of plate steel. On the outer surface of the cylinder there are situated: two belts for rotation of the casing on rolls, a ring — the base of the toothing on the rim, and two flanges for fastening the lids, as well as lids with the screw feeder and discharge device.

The cylinder of the Mill is covered on the inside by lining plates fastened by bolts. There is a hand hole in the casing for loading and unloading of the balls as well as for internal inspection.

Material is loaded into the Mill by a screw feeder fastened to the lid of the Mill. Crushed material is discharged from the Mill through a grate and the journal of the lid.

The Mill is rotated by the toothing through the drive gear and a V-belt of the electric motor.

SPECIFICATION

Capacity, kg per hour	Feed size, mm	Discharged material size, mesh	Rated output, kW	No. of loaded balls, kg		Internal dimensions of Mill, mm		Overall dimensions, mm			Weight, kg
				dia. 40 mm	dia. 50 mm	dia.	length	length	width	height	
70	10–6	up to 65	2.5	50	45	417	445	856	600	743	385

Speed, r. p. m.	Pitch circle dia. of rim toothing, mm	Pitch circle dia. of drive gear, mm	Diameter of drive sheave, mm	Diameter of electric motor sheave, mm	Electric motor speed, r. p. m.	V-belt type	Number of belts
55	550	85	270	115	1000	A	3

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DELIVERY INCLUDES:

1. Ball Mill . . . . . 1 pc
2. Electric motor, output 2.5 kW, 1000 r. p. m. . . . . 1 pc
3. V-belt, type A . . . . . 3 pcs
4. Spare Parts . . . . . 1 set

SPARE PARTS

No.	Quantity per machine	Name	Material	Weight of pc., kg
1	4	Lining plate	Manganese steel	14.0
2	1	Ditto	Ditto	13.5
3	1	Ditto	Ditto	13.5
4	1	Hand-hole lining	Ditto	1.6
5	6	Bush	Gray cast iron, grade 12-28	0.3
6	1	Toothing	Gray cast iron, grade 28-48	10.6
7	4	Roll	Steel, grade 5	3.2
8	1	Gear-wheel	Steel, grade 3	1.5

KUGELMÜHLE MIT KONTINUIERLICHER ENTLEERUNG 417×445

Modell 52-МЛ

Die Kugelmühle mit kontinuierlicher Entleerung Modell 52-МЛ dient zur Feinzerkleinerung von Werkstoffen und Erzen in offenen oder geschlossenen Arbeitskreisläufen. Die Zerkleinerung erfolgt in der Regel in einer Flüssigkeit — mit Wasser.

Die Kugelmühle mit kontinuierlicher Entleerung, mit den Hauptdimensionen 417×445 mm, ist ein Gerät, bestehend aus Rahmen, Antrieb und Zahnkranztrommel mit Bandagen und Schneckenspeiser.

Die Zerkleinerung erfolgt in der rotierenden, mit Kugeln gefüllten Mühlentrommel. Das Zerkleinerungsgut wird zwischen Mühlenfütterung und Kugeln zerkleinert und zermahlen. Die Mahlleistung der Mühle beträgt 70 kg/Std.

BESCHREIBUNG DER KONSTRUKTION

Die Mühle besteht aus zwei Hauptteilen: Rahmen samt Antrieb und Mühlenkörper.

Der Rahmen besteht aus einem Trägergerüst mit einem an das Gerüst angeschweißten, eine Grundplatte bildenden Blech. Auf der Grundplatte sind zwei Lagerpaare mit Laufrollen, auf denen das Mühlenkörper wälzt, und das Antriebs-Lagerpaar samt Zahnrad und Antriebsscheibe montiert.

Der zylindrische Mühlenkörper ist in Stahlblech ausgeführt. Am äußeren Zylindermantel sind angeordnet: zwei Reifen zum Wälzen des Körpers auf den Rollen, Grundring — für den Zahnkranz und zwei Flansche für die Deckelbefestigung, sowie Deckel mit dem Schneckenspeiser und der Auslaufeinrichtung.

Der Mühlenzylinder ist innen mit Fütterungsplatten ausgekleidet, die mittels Bolzen befestigt sind. Im Gehäusemantel ist eine Mannlochöffnung zum Einfüllen und Ausheben der Kugeln, sowie für Revisionszwecke angeordnet.

Das Zerkleinerungsgut wird in die Mühle mittels des am Mühlendeckel befestigten Schneckenspeisers eingefüllt. Das Mahlprodukt tritt aus der Mühle durch ein Gitter und den Deckelzapfen aus.

Der elektromotorische Riemenscheibenantrieb der Mühle erfolgt mittels Keilriemen über Antriebszahnräder und Zahnkranz.

HAUPTDATEN

Mahlleistung, kg/Std	Korngröße des Beschickungsgutes, mm	Korngröße des Mahlproduktes, Mesh	Installierende Leistung, kW	Menge der eingefüllten Kugeln, kg		Innere Mühlenmaße, mm		Außenmaße, mm			Gewicht, kg
				∅ 40	∅ 50	Durchmesser	Länge	Länge	Breite	Höhe	
70	10—6	bis 65	2,5	50	45	417	445	856	600	743	385

Drehzahl, U/min	Durchmesser des Zahnkranzgrundkreises, mm	Grundkreisdurchmesser des Antriebszahnrades, mm	Durchmesser der Antriebsscheibe, mm	Durchmesser der Elektromotorscheibe, mm	Elektromotor-Drehzahl, U/min	Keilriementype	Riemenzahl
55	550	85	270	115	1000	A	3

LIEFERUNGSUMFANG

1. Kugelmühle . . . . . 1 St.
2. Elektromotor mit 2,5 kW und 1000 U/min . . . . . 1 St.
3. Keilriemen, Type A . . . . . 3 St.
4. Ersatzteile . . . . . 1 Satz

ERSATZTEILE

Ordnungs-Nr.	Stückzahl pro Maschine	Benennung	Material	Stückgewicht, kg
1	4	Fütterungsplatten	Manganstahl	14,0
2	1	Fütterungsplatte	Manganstahl	13,5
3	1	Fütterungsplatte	Manganstahl	13,5
4	1	Mannlochfütterung	Manganstahl	1,6
5	6	Büchsen	Graues Roheisen 12-28	0,3
6	1	Zahnkranz	Graues Roheisen 28-48	10,6
7	4	Rollen	Stahl 5	3,2
8	1	Zahnrad	Stahl 3	1,5

MOULIN À BOULETS À RENDEMENT CONTINU DE 417×445 mm

Modèle 52-МЛ

Le moulin à boulets, à rendement continu, modèle 52-МЛ est destiné au broyage — finition de matériaux et de minerais en cycle ouvert ou fermé. En règle générale la mouture s'effectue en milieu liquide, en présence d'eau.

Le moulin à boulets, à rendement continu, se compose d'un bâti, d'un moteur de commande et d'un tambour à couronne dentée, de frettes et d'un alimentateur à limaçon.

La charge est broyée dans le tambour tournant du moulin contenant des boulets. Pénétrant entre les blindages du tambour et les boulets, les matières sont broyées par chocs et par frottement. Le rendement du moulin est de 70 kg/h.

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CONSTRUCTION DU MOULIN

Le moulin se compose de deux ensembles principaux: le bâti avec le dispositif de commande et le cylindre.

Le bâti est formé d'une ossature de profilés en U avec tôle d'acier rapportée par soudure et constituant plateforme. Cette dernière porte les paliers avec les galets sur lesquels tourne le cylindre du moulin ainsi que les paliers du mécanisme de commande avec pignon et poulie.

Le tambour du moulin est fabriqué en tôle d'acier. Il porte extérieurement: deux frettes par lesquelles il s'appuie sur les galets de roulement, l'anneau de base de la couronne dentée et deux brides pour fixation des fonds ainsi que les couvercles à alimentateur limaçon et à dispositif d'évacuation.

Le tambour du moulin est garni à l'intériuer de plaques de blindage boulonnées. Une fenêtre ménagée dans le tambour sert à introduire ou à enlever les boulets ainsi qu'à visiter l'intérieur du moulin.

Les matières brutes sont chargées par l'alimentateur à limaçon rapporté sur le couvercle du moulin. Les matières broyées sont évacuées par la grille et le tourillon.

La mise en rotation du moulin est effectuée par une couronne dentée qui reçoit son mouvement du pignon solidaire d'une poulie. Cette dernière est reliée par courroies trapézoïdales au moteur électrique.

PRINCIPALES CARACTÉRISTIQUES

Rendement, kg/h	Dimensions des morceaux de matières brutes, mm	Finesse des matières broyées, mesh	Puissance installée, kW	Quantité de boulets, kg		Cotes intérieures du moulin, mm		Cotes d'encombrement, mm			Poids, kg
				Ø de 40	Ø de 50	diamètre	longueur	longueur	largeur	hauteur	
70	10—6	jusqu'à 65	2,5	50	45	417	445	856	600	743	385

Vitesse de rotation, tr/min	Diamètre du cercle primitif de la couronne dentée, mm	Diamètre du cercle primitif du pignon de commande, mm	Diamètre de la poulie de commande, mm	Diamètre de la poulie du moteur électrique, mm	Vitesse de rotation du moteur électrique, tr/min	Type de la courroie trapézoïdale	Nombre de courroies
55	550	85	270	115	1000	A	3

LOT DE LIVRAISON

1. Moulin à boulets 1
2. Moteur de 2,5 kW à 1000 tr/min . . . 1
3. Courroie trapézoïdale type «A» . . . 3
4. Pièces de rechange . . . . . 1 jeu

PIECES DE RECHANGE

Repères	Nombre par moulin	Dénomination	Matières	Poids unitaire, kg
1	4	Plaque de blindage	Acier au manganèse	14,0
2	1	Plaque de blindage	Acier au manganèse	13,5
3	1	Plaque de blindage	Acier au manganèse	13,5
4	1	Blindage de la fenêtre de visite . . .	Acier au manganèse	1,6
5	6	Douille	Fonte grise 12-28	0,3
6	1	Couronne dentée	Fonte grise 28-48	10,6
7	4	Galet	Acier 5	3,2
8	1	Pignon	Acier 3	1,5

Внешторгиздат. Заказ № 1136/8310

121016

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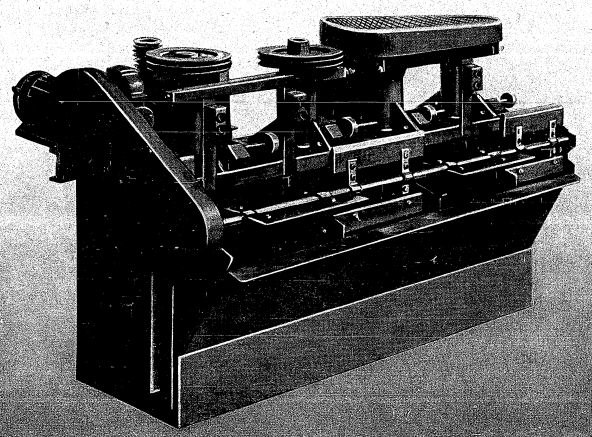

ФЛОТАЦИОННАЯ МАШИНА

„МЕХАНОБР"

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THE "MEKHANOBR" TYPE MECHANICAL ACTION FLOTATION MACHINE

The "Mekhanobr" Flotation Machine is a machine of the mechanical action type, consisting of a series of rectangular chambers in which the agitation and aeration of the pulp is effected by means of rotating impellers.

The "Mekhanobr" type Flotation Machine is employed for concentrating crushed and ground minerals.

These Flotation Machines are furnished in three models, of various capacity, dimensions and number of chambers (from 4 to 18).

Production per chamber, as measured in pulp flow:

Mekhanobr Type 1 Flotation Machine — 0.16 cu.metres per min
Mekhanobr Type 2 Flotation Machine — 0.25 cu.metres per min
Mekhanobr Type 3 Flotation Machine — 0.40 cu.metres per min

The "Mekhanobr" Flotation Machine can be supplied with 4, 6, 8, 10, 12, 14, 16 and 18 chambers of Types 1, 2 and 3.

DESCRIPTION OF THE OPERATION OF THE MACHINE

The pulp is charged into the charging chamber, whence it flows through the charging pipe to the impeller. The level of the pulp in the chambers is automatically maintained with the aid of pulp level controllers, one of which is installed for each two chambers. These pulp level controllers may be installed behind any chamber as required.

In these mechanical flotation machines, air is drawn into the chambers through the charging pipe by means of impellers.

Due to the rotation of the impellers and the supply of air, tiny bubbles of air are formed in the pulp. These air bubbles are evenly distributed throughout the entire mass of the pulp, and, meeting with and adhering to particles of the material under flotation, travel to a relatively calm zone of the flotation machine. Here they rise, together with the material under flotation, to the surface of the pulp forming a flotation foam.

This foam is discharged from the machine either under gravity or with the aid of special foam-skimmers to form the product known as concentrates. The remaining ore pulp flows along the bath of the flotation machine until it is finally discharged through the discharge outlet.

The process of agitation and aeration of the pulp in the chambers is effected by means of rotating impellers.

For regulating the internal circulation of the pulp inside the chambers, the orifices in the lower section of the air line can be closed with dampers, connected with rods and which can be raised or lowered with the aid of regulating nuts.

In the bottom of the pulp-level-controller body an outlet is provided for discharging sands; the cross section of this outlet can be varied with the aid of a sand-valve.

Tailings are discharged from the machine through an outlet in the body of the pulp-level-controller which is installed in the last chamber of the machine.

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DESIGN OF MEKHANOBR TYPE FLOTATION MACHINE

The body of the Flotation Machine is of all-welded design and is furnished with 4- and 6-chamber sections.

Multiple-chamber Flotation Machines are assembled from 4- and 6-chamber sections.

Each section is internally divided into chambers with the aid of partitions in which are drilled holes for the installation of pulp-level-controllers. At the bottom of each chamber which is provided with an armour sheet is installed a damper, with vertical ribs for damping the rotating movement of the pulp inside the chamber.

Each chamber is equipped with discharge nipples, located on the outer walls in the bottom, for discharging the pulp from the chambers.

These nipples are closed with wooden plugs during the operation of the machine.

The impeller assembly, one per chamber, is mounted on angles welded along the entire body of the machine.

The impellers are rotated by means of individual electric motors equipped with "V" belts. Mekhanobr Type Flotation Machines No. 1 and No. 2 are equipped with one electric motor for each two chambers, while in the No. 3 Mekhanobr Type Flotation Machine, the chambers are equipped with individual electric motors.

The electric motors are attached to a base plate.

The motor base can be rotated around its axis by means of a screw, for regulating take-up of the belt.

The discharge of the foamy product is facilitated by the action of the foam expeller which extends along the entire machine and whose shaft is actuated by the foam expeller motor "V" belt drive.

Specifications

General Data	Flotation Machine No.		
	1	2	3
Dimensions of chambers, mm	500×500×500	600×600×600	700×700×700
Volume of chambers, cu.metres	0.13	0.22	0.35
Capacity-pulp flow per chamber, cu.metres/min	0.16	0.25	0.40
Diameter of impellers, mm	200	250	300
Speed of impellers, r.p.m.	500	500	480
Impeller electric motors:			
Type	AO-41-4	AO-42-4	AO-41-4
Power capacity, kW	1.7	2.8	1.7
Speed, r.p.m.	1420	1420	1420
Speed of foam expeller, r.p.m.	17.5	17.5	17.5
Foam expeller electric motor:			
Type	AO-31-4	AO-31-4	AO-31-4
Power capacity, kW	0.6	0.6	0.6
Speed, r.p.m.	1410	1410	1410
Worm-gear speed reducer, type II, worm at bottom	РЧ-1; i-40	РЧ-1; i-40	РЧ-1; i-40
"V" belts	A-1600	A-1600	A-1600
Weight per chamber, kg	270	320	400

In Flotation Machines No. 1 and No. 2 one impeller electric motor is installed per two chambers.

Overall Dimensions in Millimeters

Length of Flotation Machine (A)

Flotation machine No. \ Number of chambers	4	6	8	10	12	14	16	18
No. 1	2272	3280	4268	5296	6304	7312	8320	9328
No. 2	2463	3611	4879	6087	7295	8503	9711	10919
No. 3	3083	4491	5899	7307	8715	10123	11531	12939

	Width (Б)	Height (В)
No. 1	1123	1104
No. 2	1190	1260
No. 3	1280	1327

SHIPPING COMPLEMENT

1. Flotation Machine, assembled . . . . . 1 (Type and number of chambers to be specified in order)
2. Electric Motors:
   For Flotation Machines No. 1 and No. 2 . . . . . 1 for each 2 chambers
   For Flotation Machine No. 3 . . . . . 1 per chamber
   In addition, each Flotation Machine is equipped with one foam-skimmer electric motor.
3. "V" Belts:
   For Flotation Machines No. 1 and No. 2 . . . . . 2 per chamber
   For Flotation Machines No. 3. . . . . 3 per chamber
   In addition, each Flotation Machine is equipped with a one-belt foam-skimmer drive.
4. Worm Gear Speed Reducer . . . . . 1 per machine
5. Spare Parts . . . . . 1 set

SPARE PARTS (Per chamber)

1. Impeller 1
2. Stator 1
3. Bushing, right 1
4. Bushing, left 1
5. Charging . . . . . 1 (per two chambers)
6. Bearings 2

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ФЛОТАЦИОННАЯ МАШИНА МЕХАНИЧЕСКОГО ДЕЙСТВИЯ ТИПА «МЕХАНОБР»

Флотационная машина типа «Механобр» является машиной механического действия, состоящей из ряда камер прямоугольной формы, в которых процесс агитации и аэрации пульпы осуществляется вращающимся импеллером.

Флотационная машина типа «Механобр» применяется для обогащения полезных ископаемых в измельченном виде.

Флотационные механические машины изготовляются трех типо-размеров, отличающихся друг от друга размерами камер и производительностью, а также числом камер (от 4 до 18).

Производительность одной камеры по потоку пульпы:

Флотомашина типа «Механобр» № 1 — 0,16 *м³/мин.*
Флотомашина типа «Механобр» № 2 — 0,25 *м³/мин.*
Флотомашина типа «Механобр» № 3 — 0,40 *м³/мин.*

Флотационные машины могут быть поставлены с 4, 6, 8, 10, 12, 14, 16 и 18 камерами типа № 1, № 2 или № 3.

СХЕМА РАБОТЫ МАШИНЫ

Пульпа подается в загрузочную коробку *6*, откуда по приемной трубе поступает к импеллеру *1*. Уровень пульпы в камерах поддерживается автоматически при помощи регуляторов уровня пульпы *19*, которые устанавливаются на две камеры, но могут быть установлены после любой из камер.

В механических флотационных машинах воздух засасывается импеллерами через приемную трубу.

В камерах флотационных машин, благодаря вращению импеллера и подаче воздуха, в пульпе образуются мелкие пузырьки воздуха, которые равномерно распределяются по всему объему пульпы, встречают частицы флотируемого материала, которые прилипают к ним, а затем, попадая в относительно спокойную зону во флотационной машине, выделяются вместе с частицами флотируемого материала на поверхность пульпы, образуя флотационную пену.

Эта пена самотеком или при помощи особых гребков-пеносъемателей *2* удаляется из машины и образует продукт, который называется концентратом. Остальная часть рудных материалов в виде пульпы двигается вдоль ванны флотационной машины, имеющей определенную глубину, пока не выйдет через разгрузочное отверстие.

Вращающимся импеллером осуществляется процесс агитации и аэрации пульпы в камере.

Для регулировки внутренней циркуляции пульпы в камере, отверстия в нижней части воздушной трубы перекрываются заслонками, которые соединены со штоками *10* и могут быть опущены или подняты при помощи гайки.

В нижней части корпуса регулятора уровня пульпы для прохода песков имеется отверстие, сечение которого может меняться при помощи пескового клапана.

Разгрузка хвостов из машины осуществляется через отверстие в корпусе регулятора уровня пульпы, установленного в последней камере машины.

ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ
МАШИНОЭКСПОРТ

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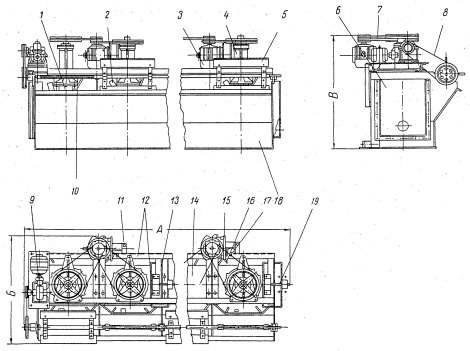
КОНСТРУКЦИЯ МАШИНЫ



Корпус флотационной машины *18* сварной конструкции изготовляется на 4 и 6 камер.

Компановка многокамерных машин производится из 4- и 6-камерных секций (корпусов).

Внутри, корпус разделен на камеры при помощи перегородок *13*. В последних имеются отверстия для установки регуляторов уровня пульпы. На дно камер положен футеровочный лист *14* и установлены успокоители *16* с вертикальными ребрами для гашения вращательного движения пульпы внутри камеры.

На задней стенке в нижней части каждой камеры имеются патрубки для выпуска пульпы из камеры.

При работе машины патрубки закрыты деревянными пробками.

На угольниках *12*, приваренных вдоль всего корпуса, устанавливаются узлы блока импеллера *4* по одному в каждой камере.

Импеллеры приводятся во вращательное движение от индивидуальных электродвигателей *3* при помощи клиновых ремней *7*, при этом на флотомашинах №№ 1 и 2 для привода импеллера устанавливается один электродвигатель на две камеры, а у машины № 3 — на каждую камеру индивидуальный электродвигатель.

Электродвигатели крепятся к площадке *15*.

Последняя имеет возможность поворачиваться относительно оси *11* винтом *17* для изменения натяжения ремней.

Для эффективного удаления пенного продукта применен лопастной пеногон *5*, проходящий вдоль всей машины, вал которого получает вращение от привода пеногона *9* посредством клинового ремня *8*.

ТЕХНИЧЕСКАЯ ХАРАКТЕРИСТИКА

Основные данные флотомашин типа «Механобр»	Номера флотомашин		
	№ 1	№ 2	№ 3
Размер камеры, *мм*	500×500×500	600×600×600	700×700×700
Объем камеры, *м*³	0,13	0,22	0,35
Производительность по потоку пульпы на 1 камеру, *м*³/*мин*	0,16	0,25	0,40
Диаметр импеллера, *мм*	200	250	300
Число оборотов импеллера, *об/мин*	500	500	480
Электродвигатель привода блока импеллера:			
тип	АО-41-4	АО-42-4	АО-41-4
мощность, *квт*	1,7	2,8	1,7
число, *об/мин*	1420	1420	1420
Число оборотов пеногона, *об/мин*	17,5	17,5	17,5
Электродвигатель привода пеногона:			
тип	АО-31-4	АО-31-4	АО-31-4
мощность, *квт*	0,6	0,6	0,6
число, *об/мин*	1410	1410	1410
Редуктор червячный, тип II, червяк снизу	РЧ-1; *i*-40	РЧ-1; *i*-40	РЧ-1; *i*-40
Ремни приводные клиновые	*А*-1600	*А*-1600	*А*-1600
Вес одной камеры, *кг*	270	320	400

На флотомашинах №№ 1 и 2 для привода импеллера устанавливается 1 электродвигатель на две камеры.

ГАБАРИТНЫЕ РАЗМЕРЫ *(мм)*

Длина флотомашины А

Номера флотомашин \ Число камер	4	6	8	10	12	14	16	18
№ 1	2272	3280	4288	5296	6304	7312	8320	9328
№ 2	2463	3611	4879	6087	7295	8503	9711	10919
№ 3	3083	4491	5899	7307	8715	10123	11531	12939

	Ширина Б	Высота В
№ 1	1123	1104
№ 2	1190	1260
№ 3	1280	1327

ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ МАШИНОЭКСПОРТ

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ОБЪЕМ ПОСТАВКИ

1. Флотационная машина в сборе	1 шт.	(количество камер и тип их обусловливаются при заказе)
2. Электродвигатели:		
на флотомашины № 1 и 2	1 шт.	на две камеры
на флотомашину № 3	1 шт.	на одну камеру
Кроме того, на флотомашину поставляется 1 электродвигатель для пеносъемника.		
3. Клиновые ремни:		
на флотомашины № 1 и 2	2 шт.	на одну камеру
на флотомашину № 3	3 шт.	на одну камеру
Кроме того, на флотомашину поставляется 1 ремень для привода пеносъемника.		
4. Червячный редуктор	1 шт.	на машину
5. Запасные части	1 компл.	

ЗАПАСНЫЕ ЧАСТИ
(на 1 камеру)

1. Импеллер	1 шт.	
2. Статор	1 шт.	
3. Втулка правая	1 шт.	
4. Втулка левая	1 шт.	
5. Труба приемная	1 шт.	(на 2 камеры)
6. Подшипники	2 шт.	

Заказ № 1736 Внешторгиздат

ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ
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ТЕЛЕГРАФНЫЙ АДРЕС
МОСКВА МАШИНОЭКСПОРТ

VSESOJUZNOJE OBJEDINENIJE

«MACHINOEXPORT»

HAMMER BREAKER
Model CM-19

STAT

STAT

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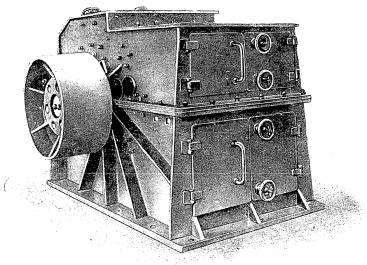
HAMMER BREAKER, MODEL CM-19

The Hammer Breaker is designed for crushing slag, soft limestone, chalk, lime and other soft rock deposits.

The Hammer Breaker consists of a split cast-iron housing, fastened by bolts. Inside the housing the rotor turns on a horizontal shaft. The rotor is supplied with suspended-pivoted hammers. The discharge grate is installed below the rotor.

The housing of the Breaker is lined on the inside with replaceable steel shielding plates and is equipped with a loading funnel.

The rotor of the Breaker consists of separate plates or discs, which are set on the shaft of the Breaker and are separated from each other by distance rings. Axles, carrying the pivoted hammers made of manganese steel, pass through openings of the discs. On each axle eight hammers are set. The second row of openings situated further from the Breaker axis serves for the reversing of the hammer axis when they become shorter as they wear out.



The discharge grate situated below the rotor inside of the housing is formed of separate grate rods, the gap between which is adjusted by gaskets. The horizontal shaft of the Breaker rotates in roller bearings installed on the side walls of the housing.

The Breaker is driven by a separate electric motor through a flexible clutch or belt transmission.

The Breaker is installed on a foundation.

SPECIFICATION

Loaded material size, mm	up to 200
Rotor lenght, mm	800
Rotor diameter, mm	1000
Rotor speed, r. p. m.	580—950
Capacity, tons per hr.	34—54
Electric motor output, kW	76—120
Overall dimensions, mm:	
length	2040
width	1850
height	1510
Weight of Breaker, kg	5850

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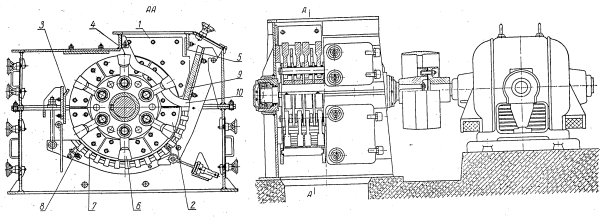
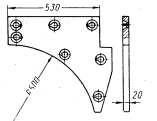
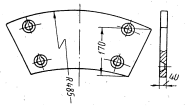
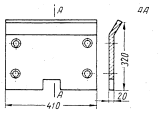
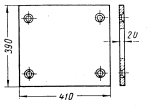
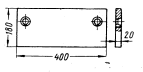
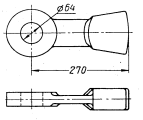
BREAKER LONGITUDINAL AND CROSS SECTIONS



Number on the unit sketch	Part number	Name of part	Sketch of part	Quantity per unit	Quantity per machine	Weight of part, kg	Grade of material
1	103-1-44	Side shield		2	2	25.5	Cr. 5
2	103-1-45	Shield		12	12	22	Cr. 5

Number on the unit sketch	Part number	Name of part	Sketch of part	Quantity per unit	Quantity per machine	Weight of part, kg	Grade of material
3	103-1-46	Shield		2	2	20	Cr. 5
4	103-1-47	Shield, top		2	2	25	Cr. 5
5	103-1-48	Shield		2	2	11	Cr. 5
6	101-2-7	Hammer		48	48	11.4	Steel, grade Г13Л

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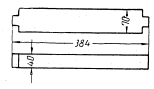
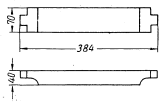
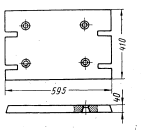
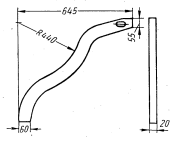
Number on the unit sketch	Part number	Name of part	Sketch of part	Quantity per unit	Quantity per machine	Weight of part, kg	Grade of material
7	103-5-12	Grate bar		26	26	8	Ст. 6
8	103-5-13	Grate bar		4	4	7.4	Ст. 5
9	103-6-12	Lining		2	2	72	Ст. 6
10	103-7-1	Grate bar		4	4	10.5	Ст. 5

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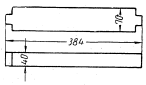
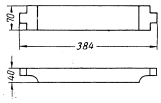
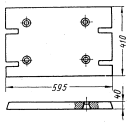
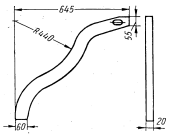
Number on the unit sketch	Part number	Name of part	Sketch of part	Quantity per unit	Quantity per one chisel	Weight of part, kg	Grade of material
7	103-5-12	Grate bar		26	26	8	Ст. 6
8	103-5-13	Grate bar		4	4	7.4	Ст. 5
9	103-6-12	Lining		2	2	72	Ст. 6
10	103-7-1	Grate bar		4	4	10.5	Ст. 5

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MOSCOW, G-200

CABLE ADDRESS:
MACHINOEXPORT Moscow

Vneshtorgizdat. Order No. 878/2131

SIMPLEX SPIRAL CLASSIFIER

Type 1-KC

The type 1-KC Simplex Spiral Classifier is used for wet classification of ground ores and other materials to produce an overflow product containing the fines, and an underflow product, discharged by the spiral, containing the coarser grains in form of sands.

These spiral classifiers are manufactured in four models:

model 1-KC-30, spiral diameter 300 mm,
model 1-KC-50, spiral diameter 500 mm,
model 1-KC-75, spiral diameter 750 mm,
model 1-KC-100, spiral diameter 1000 mm.

Classifier capacity:

sands — from 25 to 700 t per day
overflow (slimes) — from 6 to 260 t per day.

DESIGN AND PERFORMANCE

The simplex Spiral Classifier consists of the following main parts: body, spiral, and spiral hoist.

The body is an inclined welded sheet steel trough of semi-circular cross-section, mounted on a frame. The frame is the base of the classifier, on which all the rest of the machine units are mounted.

The trough has a port in its upper part through which the sands are discharged. The classifier is emptied through another port in the lower wall, normally closed with a cover which is held in place with a screw. The upper end wall has a notch cut in it to accomodate the spiral shaft.

The classifier has a feed port cut in its right side. If it is desired to feed the classifier over the side wall of the trough, this port can be closed with a special rubberlined gate.

The lower end wall and part of the left side wall are furnished with an overflow weir made of wooden bars.

The slimes are discharged over the weir into an overflow launder welded to the trough, and flow out through a pipe.

The classifier spiral consists of a tubular shaft to which the individual elements of the spiral are fixed.

The upper end of the spiral is supported by two conical roller bearings mounted in a special housing. The drive unit is mounted on the upper part of the base frame.

The spiral is actuated by a electric motor through a V-belt transmission and worm reducer.

The r. p. m. of the spiral can be altered by changing the V-belt transmission pulley.

In order to prevent sliming, the classifier is furnished with a spiral hoist to raise the spiral in case of a shut-down. This hoist consists of a worm reducer, a pair of cylindrical gears, and a shaft with two drums on which a wire rope is wound.

The ropes are connected to the lower bearing by means of a crosspiece. The spiral is raised manually by turning a hand crank fitted to the worm shaft of the reducer. During normal operations the crosspiece of the spiral rests on a special support.

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CLASSIFIER CAPACITY — SANDS
(t per day)

Spiral diameter, mm	Item	Particle size in overflow, mm							
		0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.075
300	R. p. m. of spiral	25	22	19.5	16.6	14	11.2	8.3	5.4
	Capacity, t per day	113	105	88	75	63	51	38	25
500	R. p. m. of spiral	15.3	13.4	11.5	10	8.5	6.9	5	3.2
	Capacity, t per day	260	230	195	170	145	117	85	54
750	R. p. m. of spiral	9.9	8.9	7.8	6.6	5.6	4.5	3.3	2.4
	Capacity, t per day	445	390	350	295	250	200	145	100
1000	R. p. m. of spiral	7.6	6.7	5.7	5.0	4.3	3.5	2.5	1.6
	Capacity, t per day	700	620	530	465	400	325	230	160

CLASSIFIER CAPACITY — SLIMES
(t per day)

Spiral diameter, mm	Particle size, mm							
	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.075
300	33	30	27	24	20	14	10	6
500	77	67	60	54	45	31	20	13.5
750	163	147	132	118	100	68	45	31
1000	260	240	215	190	160	110	72	50
per cent solids in overflow	40	40	35	30	30	20	20	15

CHIEF TECHNICAL DATA

Item	Model			
	1-KC-30	1-KC-50	1-KC-75	1-KC-100
Pitch of double-thread spiral, mm	160	250	380	500
Spiral r. p. m.	19.5	12	7.8	5
Trough incline, degrees	14-18	14-18	14-18	14-18
Type of motor	A-41-6	A-41-6	A-51-6	A-51-4
Power rating, kW	1.0	1.0	2.8	4.5
Motor, r. p. m.	930	930	950	1440
Worm reducer, model	P4-3	P4-3	P4H-180	P4H-180
Number of V-belts	2	2	3	3
Motor pulley diameter, mm	100	100	140	140
Reducer pulley diameter, mm	120	200	340	314
Weight of classifier, kg	760	1470	2800	3825

OVERALL DIMENSIONS

Model	Lenght	Width	Height
1-KC-30	3900	773	843
1-KC-50	5430	934	1274
1-KC-75	6730	1077	1575
1-KC-100	7876	1620	1934

SHIPMENT LIST

1. Classifier 1
2. Motor 1
3. Reducer 1
4. V-belts (models KC-30 and KC-50) . 2
   V-belts (models KC-75 and KC-100) . 3
5. Spare parts . . . . . 1 set

EINFACHSPIRALKLASSIERER

Type 1-KC

Der Einfachspiralklassierer Type 1-KC dient zur Naßklassierung von zerkleinerten Erzen und anderen Stoffen unter Lieferung einer feinkörnigen Fraktion im Überlauf, während das grobkörnigere Produkt in Form von Sanden von der Spirale ausgeladen wird.

Die Einfachspiralklassierer werden in vier Modellen ausgeführt:

Modell 1-KC-30, Durchmesser der Spirale 300 mm,
Modell 1-KC-50, Durchmesser der Spirale 500 mm,
Modell 1-KC-75, Durchmesser der Spirale 750 mm,
Modell 1-KC-100, Durchmesser der Spirale 1000 mm.

Leistung des Klassierers:

Sandaustrag — von 25 bis 700 t/24 Std.
Feinkörnige Fraktion in Überlauf — von 6 bis 260 t/24 Std.

KONSTRUKTION UND WIRKUNGSWEISE DES KLASSIERERS

Der Einfachspiralklassierer besteht aus folgenden Hauptteilen: Klassierergehäuse, Spirale und Hubvorrichtung der Spirale.

Das Gehäuse ist ein aus Stahlblechen zusammengeschweißter und auf dem Rahmen montierter Schrägtrog halbzylindrischen Querschnitts. Der Rahmen bildet die Unterlage des Klassierers, auf der alle übrigen Hauptbestandteile der Maschine montiert werden.

Im Oberteil des Trogs ist die Sandausladeluke vorgesehen. Zur vollständigen Entladung des Klassierers ist die untere Stirnwand mit einer weiteren Luke versehen, die mit Deckel zugeschlossen wird; durch Schraube wird der Deckel angedrückt. In der oberen Stirnwand ist ein Ausschnitt für den Durchgang der Spiralenwelle vorgesehen.

Zur Beschickung des Klassierers ist in der Rechtswandung des Trogs eine Beschickungsöffnung ausgeschnitten. Falls die Beschickung über die Trogkante erfolgt, wird die Beschickungsöffnung mit einem Sonderschild mit Gummichtung zugemacht.

Die untere Stirnwand und ein Teil der Linkswand sind mit einer aus Holzlatten hergestellten Überlaufschwelle versehen.

An das Gehäuse ist die Abgußrinne angeschweißt, der das feinkörnige Produkt über die Schwelle zuströmt und aus der es durch Stutzen ausfließt.

Die Klassiererspirale besteht aus dem Achsrohr auf dem die aus einzelnen Elementen bestehende Spirale befestigt ist.

Zur Abstützung des Oberteils der Spirale dienen zwei im Sondergehäuse montierten Kegelrollenlager. Der Antrieb ist im Oberteil des Grundrahmens montiert.

Die Spirale erhält ihre Drehbewegung über Keilriemenübertragung und Schneckenreduziergetriebe vom Elektromotor.

Die Keilriemenübertragung gestattet, durch Auswechselung der Riemenscheibe die Drehzahl der Spirale zu ändern.

Zur Hebung der Spirale im Falle einer Stillsetzung des Klassierers, damit ein Verschlammen der Spirale verhindert wird, ist eine Hubvorrichtung vorgesehen, die aus dem Schneckenreduziergetriebe, dem Stirnräderpaar und der Welle mit 2 Trommeln besteht, auf die ein Drahtseil aufgewickelt wird.

Die Drahtseile sind mittels Querstück mit dem unteren Lager verbunden. Das Heben der Spirale erfolgt von Hand mittels der auf die Schneckenwelle des Reduziergetriebes aufgesetzten Handkurbel. Wenn die Maschine im Betriebe ist, liegt das Querstück der Spirale auf speziellen Anschlägen auf.

SANDAUSTRAGSLEISTUNG DES KLASSIERERS
(t/24 Std)

Durchmesser der Spirale, mm	Benennung	Korngröße des Feinprodukts, mm							
		0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.075
300	Drehzahl der Spirale, U/Min	25	22	19,5	16,6	14	11,2	8,3	5,4
	Leistung, t/24 Std	113	105	88	75	63	51	38	25
500	Drehzahl der Spirale, U/Min	15,3	13,4	11,5	10	8,5	6,9	5	3,2
	Leistung, t/24 Std	260	230	195	170	145	117	85	54
750	Drehzahl der Spirale, U/Min	9,9	8,9	7,8	6,6	5,6	4,5	3,3	2,4
	Leistung, t/24 Std	445	390	350	295	250	200	145	100
1000	Drehzahl der Spirale, U/Min	7,6	6,7	5,7	5,0	4,3	3,5	2,5	1,6
	Leistung, t/24 Std	700	620	530	465	400	325	230	160

ÜBERLAUFFEINPRODUKT- AUSTRAGSLEISTUNG
(t/24 Std)

Durchmesser der Spirale, mm	Korngröße des Produkts, mm							
	0,833	0,589	0,417	0,295	0,208	0,147	0,104	0,075
300	33	30	27	24	20	14	10	6
500	77	67	60	54	45	31	20	13,5
750	163	147	132	118	100	68	45	31
1000	260	240	215	190	160	110	72	50
Feststoffgehalt des Überlaufs, %	40	40	35	30	30	20	20	15

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TECHNISCHE HAUPTDATEN

Benennung	Modell			
	1-KC-30	1-KC-50	1-KC-75	1-KC-100
Steigung der zweigängigen Spirale, mm	160	250	380	500
Drehzahl der Spirale, U/Min	19,5	12	7,8	5
Trog-Neigungswinkel, Grade	14-18	14-18	14-18	14-18
Elektromotor, Marke	A-41-6	A-41-6	A-51-6	A-51-4
Elektromotor-Leistung, kW	1,0	1,0	2,8	4,5
Elektromotor-Drehzahl, U/Min	930	930	950	1440
Schneckenreduziergetriebe, Modell	РЧ-3	РЧ-3	РЧП-180	РЧП-180
Keilriemen, Stückzahl	2	2	3	3
Elektromotor-Riemenscheibendurchmesser, mm	100	100	140	140
Reduziergetriebe-Riemenscheibendurchmesser, mm	120	200	340	314
Gewicht des Klassierers, kg	760	1470	2800	3825

AUSSENMASSE

Modell	Länge	Breite	Höhe
1-KC-30	3900	773	843
1-KC-50	5430	934	1274
1-KC-75	6730	1077	1575
1-KC-100	7876	1620	1934

LIEFERUNGSUMFANG

1. Klassierer 1
2. Elektromotor 1
3. Reduziergetriebe 1
4. Keilriemen:
   für Modell KC-30 und KC-50. . . 2
   für Modell KC-75 und KC-100 . . 3
5. Ersatzteile . . . . . 1 Satz

CLASSIFICATEUR A UNE HÉLICE

Type 1-KC

Cet appareil est destiné à classer par voie humide des minerais broyés et autres matières.

La fraction fine sort par le trop-plein tandis que la fraction à granulation plus forte est évacuée sous la forme de sables avec le produit déchargé par l'hélice.

Les classificateurs à une hélice sont fabriqués en quatre modèles:

modèle 1-KC-30, à hélice de 300 mm de diamètre,

modèle 1-KC-50, à hélice de 500 mm de diamètre,

modèle 1-KC-75, à hélice de 750 mm de diamètre,

modèle 1-KC-100, à hélice de 1000 mm de diamètre.

Débit du classificateur:

en sables — de 25 à 700 t par 24 heures,

en fraction fine — de 6 à 260 t par 24 heures.

CONSTRUCTION ET SCHÉMA DE FONCTIONNEMENT DU CLASSIFICATEUR

Le classificateur à une seule hélice comprend essentiellement les éléments suivants: l'enveloppe, l'hélice et le mécanisme de relevage de l'hélice.

L'enveloppe est une auge inclinée, semi-cylindrique, soudée en tôles d'acier et montée sur le cadre. Ce cadre constitue l'embase de l'appareil sur laquelle viennent se fixer tous les autres éléments.

Dans la partie supérieure de l'auge est ménagée la porte servant à décharger les sables. La vidange complète du classificateur se fait par un trou ménagé dans la face inférieure. Ce trou est obturé par le couvercle serré en place par la vis. La face supérieure comporte une ouverture servant au passage de l'arbre de l'hélice.

Le trou de chargement découpé dans la paroi droite est fermé par un bouclier spécial à joint en caoutchouc toutes les fois que l'alimentation du classificateur se fait par-dessus le bord de l'appareil.

La face inférieure ainsi qu'une partie de la paroi gauche sont dotées d'un seuil de déversement exécuté en barres de bois.

Sur l'enveloppe du classificateur est soudée la rigole de déversement dans laquelle vient retomber par-dessus le seuil la fraction fine qui sort ensuite par la tubulure.

L'hélice du classificateur est constituée par le tube axial avec l'hélice proprement dite en éléments séparés.

La partie supérieure de l'hélice repose dans deux paliers à rouleaux coniques montés dans un corps spécial. Les mécanismes de commande sont montés dans la partie supérieure du cadre principal.

La rotation de l'hélice est opérée par le moteur électrique à l'aide de la transmission à courroies trapézoïdales et le réducteur à vis sans fin.

Par remplacement de la poulie, la transmission à courroies trapézoïdales permet de faire varier le nombre de tours de l'hélice.

Un dispositif de relevage de l'hélice permet d'éviter le colmatage de celle-ci par les schlamms en cas d'arrêt du classificateur. Ce dispositif comprend un réducteur à vis sans fin, un couple de pignons cylindriques et un arbre à deux tambours sur lesquels vient s'enrouler le câble.

Ces câbles sont réunis au palier inférieur par l'intermédiaire d'une traverse. Le relevage de l'hélice s'opère à la main, à l'aide d'une manivelle calée sur l'arbre de la vis sans fin du réducteur. Au cours du travail, la traverse de l'hélice vient se poser sur des butées spéciales.

DÉBIT DU CLASSIFICATEUR EN SABLES

(t/par 24 heures)

Diamètre de l'hélice, mm	Caractéristiques	Granulation des fractions fines, mm							
		0,833	0,589	0,417	0,295	0,208	0,147	0,104	0,075
300	Vitesse de rotation de l'hélice, tr/min	25	22	19,5	16,6	14	11,2	8,3	5,4
	Débit, t/24 h	113	105	88	75	63	51	38	25
500	Vitesse de rotation de l'hélice, tr/min	15,3	13,4	11,5	10	8,5	6,9	5	3,2
	Débit, t/24 h	260	230	195	170	145	117	85	54
750	Vitesse de rotation de l'hélice, tr/min	9,9	8,9	7,8	6,6	5,6	4,5	3,3	2,4
	Débit, t/24 h	445	390	350	295	250	200	145	100
1000	Vitesse de rotation de l'hélice, tr/min	7,6	6,7	5,7	5,0	4,3	3,5	2,5	1,6
	Débit, t/24 h	700	620	530	465	400	325	230	160

DÉBIT DU CLASSIFICATEUR EN FRACTIONS FINES

(t/par 24 heures)

Diamètre de l'hélice, mm	Granulation des matières, mm							
	0,833	0,589	0,417	0,295	0,208	0,147	0,104	0,104
300	33	30	27	24	20	14	10	6
500	77	67	60	54	45	31	20	13,5
750	163	147	132	118	100	68	45	31
1000	260	240	215	190	160	110	72	50
Teneur en matières solides de la fraction fine, %	40	40	35	30	30	20	20	15

PRINCIPALES CARACTÉRISTIQUES TECHNIQUES

Dénominations	Modèles			
	1-KC-30	1-KC-50	1-KC-75	1-KC-100
Pas de l'hélice à filet double, mm	160	250	380	500
Vitesse de rotation de l'hélice, tr/min	19,5	12	7,8	5
Pente de l'auge, degrés	14 à 18	14 à 18	14 à 18	13 à 18
Marque du moteur électrique	A-41-6	A-41-6	A-51-6	A-51-4
Puissance du moteur électrique, kW	1,0	1,0	2,8	4,5
Vitesse de rotation du moteur électrique, tr/min	930	930	950	1440
Modèle de réducteur à vis sans fin	РЧ-3	РЧ-3	РЧП-180	РЧП-180
Courroies trapézoïdales, (pièces)	2	2	3	3
Diamètre de la poulie du moteur électrique, mm	100	100	140	140
Diamètre de la poulie du réducteur, mm	120	200	340	314
Poids du classificateur, kg	760	1470	2800	3825

COTES D'ENCOMBREMENT

Modèles	Longueur	Largeur	Hauteur
1-KC-30	3900	773	843
1-KC-50	5430	934	1274
1-KC-75	6730	1077	1575
1-KC-100	7876	1620	1934

LOT DE LIVRAISON

1. Classificateur complet 1
2. Moteur électrique 1
3. Réducteur 1
4. Courroies trapézoïdales:
   pour les classificateurs modèles KC-30 et KC-50 2
   pour les classificateurs modèles KC-75 et KC-100 3
5. Jeu de pièces de rechange 1

Внешторгиздат. Заказ № 1287/8586

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SÄMTLICHE AUSKÜNFTE
ÜBER LIEFERUNG VON BETRIEBSAUSRÜSTUNGEN
UND MASCHINEN ERTEILT

V/O „MASCHINOEXPORT"

MOSKAU, G-200 Smolenskaja-Sennaja Pl., 32/34

TELEGRAMMADRESSE:
Moskau MASCHINOEXPORT

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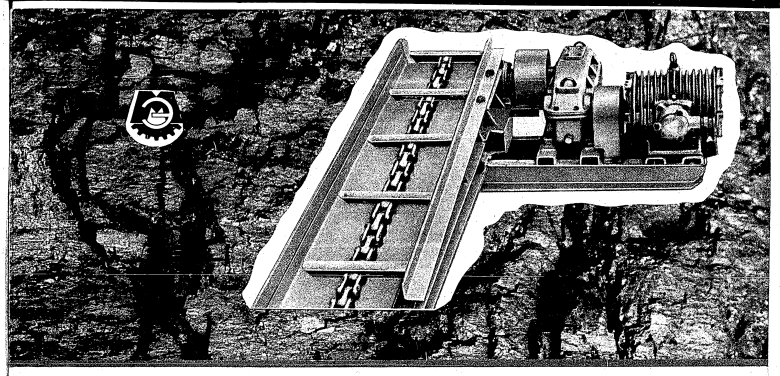
POUR TOUS RENSEIGNEMENTS
RELATIFS À L'ACHAT D'OUTILAGE
PRIÈRE DE S'ADRESSER

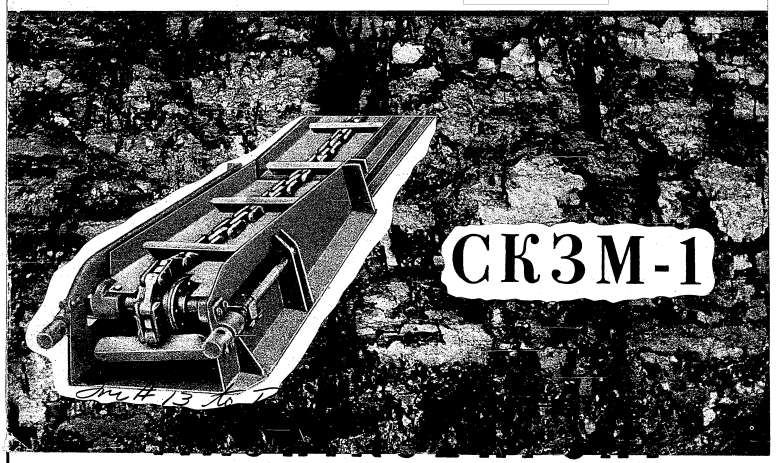
à V/O «MACHINOEXPORT»

MOSCOU, G-200 pl. Smolenskaïa-Sennaïa, 32/34

ADRESSE TÉLÉGRAPHIQUE:
Moscou MACHINOEXPORT



ЗАБОЙНЫЙ СКРЕБКОВЫЙ КОНВЕЙЕР ДЛЯ ГОРИЗОНТАЛЬНЫХ СЛОЕВ



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ЗАБОИНЫЙ СКРЕБКОВЫЙ КОНВЕЙЕР ДЛЯ ГОРИЗОНТАЛЬНЫХ СЛОЕВ

СКЗМ-1

Конвейер предназначается для транспортирования угля при разработке мощных крутопадающих пластов горизонтальными слоями.

Конвейер состоит из приводной головки с электродвигателем, натяжной головки, верхнего и нижнего линейных рештаков и тяговой скребковой цепи разборной конструкции.

Приводная головка приводит в движение скребковую цепь и является основным механизмом конвейера.

Редуктор приводной головки состоит из трех пар цилиндрических шестерен, передающих вращение вала ротора электродвигателя головному валу конвейера, а последний через звездочку — скребковой цепи.

Натяжная головка служит для регулирования натяжения скребковой цепи конвейера и состоит из рамы, вала со звездочкой, смонтированной на шарикоподшипниковых опорах, и двух винтов для ручного натяжения цепи.

ТЕХНИЧЕСКАЯ ХАРАКТЕРИСТИКА

Производительность при погрузке взрывонавалкой с применением ограждения с завальной стороны, *т/час*	50
Производительность при транспортировании только по сечению желоба, *т/час*	30
Длина конвейера, *м*	29
Скорость движения скребковой цепи, *м/сек*	0,42
Электродвигатель:	
тип	ВАД-42
мощность, *квт*	4,2
скорость вращения, об/мин	1450
Общий вес конвейера при длине 29 *м* без электрооборудования, *кг*	2804

Основные размеры и вес узлов:

Наименование	Привод	Линейные секции	Натяжная головка
Длина, *мм*	2350	1510	2775
Ширина, „	1450	491	550
Высота, „	340	173	315
Вес, *кг*	418,5	нижний рештак 59,4 верхний рештак 32,3	195,6

ИЗДАНО В СОВЕТСКОМ СОЮЗЕ

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MINE SCRAPER CHAIN CONVEYOR FOR HORIZONTAL SEAMS CK3M-1

This conveyor is intended for haulage of coal when drifting in pitch dipping seams.

The conveyor comprises a driving head with electric motor, a tensioning head, upper and lower line trough, and a pulling scraper chain of design allowing its disassembling.

The driving head, imparting motion to the scraper chain, acts as the main unit of the conveyor.

The reductor of the driving head is made up of three pairs of spur gears transmitting rotation from the electric motor rotor shaft to the head shaft of the conveyor; the latter, through a sprocket, imparts it subsequently to the scraper chain.

The tensioning head serves for adjustment of the conveyor scraper chain tension and comprises a frame, a shaft with a sprocket mounted on ball bearings, and two screws for tightening the chain by hand.

SPECIFICATIONS

Capacity in handling explosion-generated dumps with use of guards on the loading side, tons per hour	50
Capacity in transporting within the trough cross section only, tons per hour	30
Conveyor length, m	29
Scraper chain velocity, m per sec	0.42
Electric motor:	
type	ВАД-42
output, kW	4.2
speed, r.p.m.	1,450
Total weight of conveyor, 29 m long without electric equipment, kg	2,804

MAIN SIZES AND WEIGHTS OF UNITS

Denomination	Drive	Line sections	Tensioning head
Length, mm	2,350	1,510	2,775
Width, mm	1,450	491	550
Height, mm	540	173	315
Weight, kg	418.5	lower trough 59.4 upper trough 32.3	195.6

VSESOJUZNOJE OBJEDINENIJE

«MACHINOEXPORT»

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ABBAU-KRATZKETTENFÖRDERER FÜR HORIZONTALSCHICHTEN СКЗМ-1

Dieser Förderer dient zur Förderung von Kohle mächtiger, stark geneigter Flöze beim Abbau in horizontalen Schichten.

Der Förderer besteht aus einem Antriebskopf mit Elektromotor, einem Spannkopf, einer oberen und einer unteren Förderrutsche und einer auseinanderlegbaren Kratzkette.

Der Antriebskopf setzt die Kratzkette in Bewegung und gilt als Haupttriebwerk des Förderers.

Das Untersetzungsgetriebe des Antriebskopfs besteht aus drei Stirnräderpaaren, die die Drehung der Läuferwelle des Elektromotors auf die Kopfwelle des Förderers übertragen, die über die Ritzel mit der Kratzkette verbunden ist.

Der Spannkopf dient zum Regeln der Spannung der Fördererkratzkette und besteht aus einem Rahmen, einer Welle mit einem in Kugellagern laufendem Ritzel und zwei Schrauben für die Spannung der Kette von Hand.

TECHNISCHE DATEN

Fördermenge beim Aufladen bei Schießarbeit mit Schutzwand an der Aufladeseite, t/Std.	50
Fördermenge beim Fördern lediglich im Förderrinnenquerschnitt, t/Std.	30
Förderlänge, m	29
Kratzkettengeschwindigkeit, m/sek	0,42
Elektromotor:	
Type	ВАД-42
Leistung, kW	4,2
Drehzahl, U/min	1450
Gesamtgewicht des Förderers bei 29 m Länge ohne Elektroausrüstung, kg	2804

HAUPTMASSE UND GEWICHT DER HAUPTTEILE

	Antrieb	geradlinige Sektionen	Spannkopf
Länge, mm	2350	1510	2775
Breite, mm	1450	491	550
Höhe, mm	540	173	315
Gewicht, kg	418,5	untere Förderrutsche 59,4 obere Förderrutsche 32,3	195,6

CONVOYEUR A RACLETTES DE CHANTIER POUR L'EXPLOITATION PAR TRANCHES HORIZONTALES СКЗМ-1

Ce convoyeur est utilisé pour le déblocage des chantiers lors de l'exploitation par tranches horizontales des couches puissantes à fort pendage.

Il comporte une tête motrice avec moteur électrique, une tête de renvoi, des couloirs inférieur et supérieur et une chaîne de traction à raclettes démontable.

La tête motrice met en mouvement la chaîne à raclettes et constitue le principal mécanisme du convoyeur.

Le réducteur de la tête motrice se compose de trois couples d'engrenages cylindriques qui transmettent la rotation de l'arbre du moteur électrique à l'arbre de tête du convoyeur, cet arbre actionnant ensuite par l'intermédiaire d'une noix la chaîne à raclettes.

La tête de renvoi sert à régler la tension de la chaîne à raclettes du convoyeur et comprend: un cadre, un arbre avec une noix montée sur paliers à billes et deux vis servant à tendre la chaîne à la main.

CARACTÉRISTIQUES TECHNIQUES

Débit avec chargement par foudroyage et utilisation d'un protecteur du côté chargement, t/h	50
Débit avec déblocage par la section du couloir seulement, t/h	30
Longueur du convoyeur, m	29
Vitesse de la chaîne à raclettes, m/s	0,42
Moteur électrique:	
type	ВАД-42
puissance, kW	4,2
vitesse de rotation, tr/min	1450
Poids total du convoyeur (longueur — 29 m) sans équipement électrique, kg	2804

COTES PRINCIPALES ET POIDS DES ÉLEMENTS:

Dénomination	Dispositif de commande	Sections de ligne	Tête motrice
Longueur, mm	2350	1510	2775
Largeur, mm	1450	491	550
Hauteur, mm	540	173	315
Poids, kg	418,5	couloir inférieur 59,4 couloir supérieur 32,3	195,6

Внешторгиздат. Заказ № 602/1268

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ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

МАШИНОЭКСПОРТ

СССР. МОСКВА

●

ТЕЛЕГРАФНЫЙ АДРЕС
МОСКВА МАШИНОЭКСПОРТ

V S E S O J U Z N O J E
E K S P O R T N O -
I M P O R T N O J E
O B J E D I N E N I J E

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Detailed pamphlets sent on request.

All inquiries and correspondence to be forwarded to:

Vsesojuznoje Exportno-Importnoje Objedinenije

StankoImport

32/34, Smolenskaja-Sennaja pl., Moscow, USSR.

For cables: Stankoimport Moscow
Phone: G4-21-32

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The Machines, Apparatus and Instruments produced in the USSR are outstanding for their high efficiency, convenience and safety in operation and long service.

The first class material, perfect modern design and skilful workmanship provide accuracy, high efficiency and durability of the equipment. Steady improvement of machine and instrument design in the USSR aims at the increase of productivity, accuracy, reliability and dependability of machine in operation as well as the reduction of operator's fatigue by improving and convenient placing of all operating controls and the all-increasing automatization of operation.

The Vsesojuznoje Exportno-Importnoje Objedinenije "Stankoimport" is able to offer a wide range of Machine Tools and Wood-Working Machinery, both universal and special types including Automatic Transfer Machines and Automatic Workshops, Metal-Working Machinery, Testing Machines, Motion Picture Equipment, Precision Optical, Mechanical, Electronic and other Instruments, Portable Electric and Pneumatic Tools, High-efficiency Cutting Tools, Ball and Roller Bearings, etc.

LATHES

Bench Lathe, model T 65

Swing over bed ..... 130 mm
Distance between centers ..... 200 mm

Precision Tool Room Lathe, model 1602

Swing over bed ..... 130 mm
Distance between centers ..... 250 mm

High Accuracy Tool Room Lathe, model 1613 Д

Swing over bed ..... 240 mm
Distance between centers ..... 270 mm

Tool Room Lathe, model 1612 B

Swing over bed ..... 270 mm
Distance between centers ..... 500 mm

High Accuracy Tool Room Lathe, model 1612 П

Swing over bed ..... 270 mm
Distance between centers ..... 500 mm

High Accuracy Tool Room Lathe, model ТП 1 M

Swing over bed ..... 300 mm
Distance between centers ..... 750 mm

Tool Room Lathe, model MTB 150

Swing over bed ..... 320 mm
Distance between centers ..... 500 mm

Tool Room Lathe, model 1615 M

Swing over bed ..... 320 mm
Distance between centers ..... 750 mm

High Accuracy Tool Room Lathe, model 1615 П

Swing over bed ..... 320 mm
Distance between centers ..... 750 mm

High Accuracy Tool Room Lathe, model 1 E 61

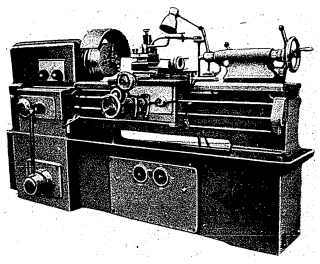
Swing over bed ..... 320 mm
Distance between centers ..... 750 mm

Tool Room Lathe, model 1616

Swing over bed ..... 320 mm
Distance between centers ..... 750 mm

High Accuracy Tool Room Lathe, model 1616 П

Swing over bed ..... 320 mm
Distance between centers ..... 750 mm



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Tool Room Lathe, model 1 П 61

Swing over bed ..... 320 mm
Distance between centers ..... 750 mm

Tool Room Lathe, model ТВО 1

Swing over bed ..... 320 mm
Distance between centers ..... 1000 mm

Tool Room Lathe, model 161 АМ

Swing over bed ..... 350 mm
Distance between centers ..... 750; 1000 mm

Tool Room Lathe, model ТВ 5

Swing over bed ..... 350 mm
Distance between centers ..... 1000 mm

Tool Room Lathe, model 1 Д 62 М

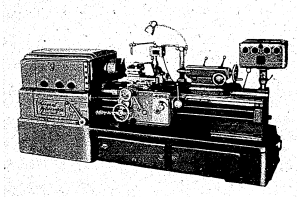
Swing over bed ..... 400 mm
Distance between centers ..... 750; 1000; 1500; 2000 mm

Tool Room Lathe, model 1 А 62

Swing over bed ..... 400 mm
Distance between centers ..... 750; 1000; 1500; 2000 mm

High Accuracy Tool Room Lathe, model 1 А 62 Б

Swing over bed ..... 400 mm
Distance between centers ..... 1000 mm



Tool Room Lathe, model 162

Swing over bed ..... 400 mm
Distance between centers .. 750; 1000; 1500 mm

Automatic Step Shaft Sizing Lathe, model 1 Б 62

Swing over bed ..... 400 mm
Distance between centers .. 750; 1000; 1500 mm

High Accuracy Lead Screw Cutting Lathe, model 1622

Height of centers ..... 225 mm
Distance between centers ..... 2500 mm

High Speed Tool Room Lathe, model 1623

Swing over bed ..... 450 mm
Distance between centers ..... 1000 mm

High Speed Tool Room Lathe, model 1620

Swing over bed ..... 500 mm
Distance between centers ..... 1000 mm

Tool Room Lathe, model Т 60

Swing over bed ..... 500 mm
Distance between centers ..... 1000 mm

Engine Lathe, model 1 Д 63 А

Swing over bed ..... 615 mm
Distance between centers ..... 1500; 3000 mm

Engine Lathe, model 164

Swing over bed ..... 800 mm
Distance between centers ..... 3000 mm

Engine Lathe, model 165

Swing over bed ..... 1000 mm
Distance between centers ..... 3000; 5000 mm

Light Alloy Chucking Lathe, model МК 179

Swing over bed ..... 1000 mm
Swing over gap ..... 1400 mm

Profiling Chucking Lathe, model 164 С 1

Swing over bed ..... 1000 mm

Heavy Duty Lathe, model 1660

Swing over bed ..... 1200 mm
Distance between centers ..... 6500 mm

Heavy Duty Lathe, model 1670

Swing over bed ..... 1600 mm
Distance between centers ..... 8500 mm

Heavy Duty Lathe, model 1680

Swing over bed ..... 2000 mm
Distance between centers ..... 10 000 mm

Centerless Bar Turning Machine, model 9330 А

Maximum diameter that can be cut .. 160 mm
Maximum bar length that can be cut 10 000 mm

Semiautomatic Short Screw Cutting Lathe, model 192

Maximum diameter that can be cut .. 320 mm

Relieving Lathe, model 1810

Maximum diameter of milling cutter that can be relieved ..... 50 mm
Maximum length that can be relieved 50 mm

Universal Relieving Lathe, model К 96

Swing over bed ..... 560 mm
Maximum length that can be relieved 560 mm

Combination Turning, Milling and Drilling Machine, model 1 А 95

Turning and Milling Unit:

Swing over bed ..... 680 mm
Distance between centers ..... 1000 mm
Working surface of milling table 700 × 300 mm

Drilling and Milling Unit:

Maximum drill capacity ..... 25 mm

Slotting Attachment

Maximum stroke ..... 100 mm

Sharpening Attachment

Maximum diameter of grinding wheel 100 mm

Internal, Cylindrical and Face Grinding Attachement

Maximum diameter of grinding wheel 150 mm

Turning, Boring and Facing Lathe, model ЛТ 2

Swing over bed ..... 2000 mm
Maximum weight of work, that can be machined ..... 3000 kg

VERTICAL BORING MILLS

Vertical Boring Mill, model 153

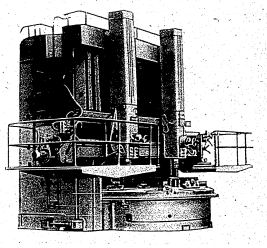
Maximum diameter of turning .... 1250 mm
Maximum height of work that can be machined ..... 1000 mm

High Speed Vertical Boring Mill, model 1536

Maximum diameter of turning .... 1250 mm
Maximum height of work that can be machined ..... 1000 mm

Double Column Vertical Boring Mill, model 1551

Maximum diameter of turning .... 1500 mm
Maximum height of work that can be machined ..... 1250 mm



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Double Column Vertical Boring Mill, model 1553

Maximum diameter of turning ..... 2300 mm
Maximum height of work that can be machined ..... 1250 mm

Double Column Vertical Boring Mill, model 1556

Maximum diameter of turning ..... 2700 mm
Maximum height of work that can be machined ..... 1600 mm

Double Column Vertical Boring Mill, model 1532

Maximum diameter of turning ..... 3400 mm
Maximum height of work that can be machined ..... 2000 mm

Double Column Vertical Boring Mill, model 1565

Maximum diameter of turning .... 5300 mm
Maximum height of work that can be machined ..... 3000 mm

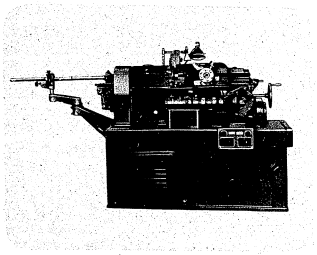
RAILROAD SHOP LATHES, ROLL TURNING LATHES AND INGOT SLICING MACHINES

Car-wheel Journal Semiautomatic Turning Lathe (rough turning), model 183

Maximum diameter of axle that can be machined ..... 300 mm
Distance between centers ..... 2800 mm

Car-wheel Journal Semiautomatic Turning Lathe (finish turning) model 183 A

Maximum diameter of axle that can be machined ..... 370 mm
Distance between centers ..... 2800 mm



Cutting off and Centering Car-wheel Axle Semiautomatic Machine, model 1830

Maximum diameter of axle that can be machined ..... 212 mm
Minimum and maximum length of axle admitted ..... 2500—2600 mm

Cutting off and Centering Locomotive Axle Semiautomatic Machine, model 1831

Maximum diameter of axle that can be machined ..... 285 mm
Minimum and maximum length of axle admitted ..... 1760—2000 mm

Locomotive Axle Semiautomatic Turning Lathe (rough turning), model 1832

Maximum diameter of axle that can be machined ..... 350 mm
Minimum and maximum length of axle admitted ..... 1800—3000 mm

Locomotive Axle Semiautomatic Turning Lathe (finish turning), model 1833

Maximum diameter of axle that can be machined ..... 255 mm
Distance between centers ..... 2860 mm

Railway Wheel Lathe, model 1936

Maximum diameter of wheel admitted 1100 mm
Maximum length of wheel set admitted ..... 2600 mm
Minimum and maximum railway gage of wheel set ..... 1200—1700 mm

Railway Wheel Journal Turning and Burnishing Lathe, model MK 177 C 1

Maximum diameter of wheel set admitted ..... 1150 mm
Maximum distance between centers 2500 mm

Roll Turning Lathe, model 1945

Maximum diameter of roll that can be machined ..... 1000 mm
Maximum length of roll that can be machined ..... 4000 mm

Roll Turning Lathe, model 1 A 947

Maximum diameter of roll that can be machined ..... 1150 mm
Maximum length of roll that can be machined ..... 7000 mm

Roll Turning Lathe, model 1827

Maximum diameter of roll that can be machined ..... 1350 mm
Distance between centers ..... 6500 mm

Ingot Turning Lathe, model MK 168

Maximum diameter of ingot that can be machined ..... 500 mm
Maximum length of ingot that can be machined ..... 2000 mm

Ingot Slicing Machine, model 1865

Maximum diameter of ingot that can be machined ..... 600 mm
Maximum length of ingot admitted .. 3200 mm

TURRET LATHES, SCREW AUTOMATIC MACHINES AND SEMIAUTOMATIC LATHES

Turret Lathe, model 1318

Maximum bar capacity ..... 18 mm

Semiautomatic Turret Lathe, model 1 II 318

Maximum bar capacity ..... 18 mm

Turret Lathe, model 1325

Maximum bar capacity ..... 25 mm

Semiautomatic Turret Lathe, model 1 II 326

Maximum bar capacity ..... 25 mm

Turret Lathe, model 1336 M

Maximum bar capacity ..... 36 mm

Turret Lathe, model 1338

Maximum bar capacity ..... 38 mm

Turret Lathe, model 1 K 36

Maximum bar capacity ..... 65 mm
Swing over carriage ..... 350 mm

Turret Lathe, model 1 K 37

Maximum bar capacity ..... 85 mm
Swing over carriage ..... 450 mm

Automatic Woodscrew Head Turning and Slotting Machine, model 1003

Minimum and maximum diameter of woodscrew that can be machined 3—5 mm
Minimum and maximum length of woodscrew that can be machined 15—60 mm

Automatic Woodscrew Thread Cutting Machine, model 1013

Minimum and maximum diameter of woodscrew that can be machined .. 3—5 mm
Minimum and maximum length of woodscrew that can be machined 15—60 mm
Minimum and maximum length of thread that can be cut ..... 6—34 mm

Single-Spindle Bar Automatic Machine, model 1104

Maximum bar capacity ..... 4 mm

High Accuracy Single-Spindle Bar Automatic Machine, model 1104 II

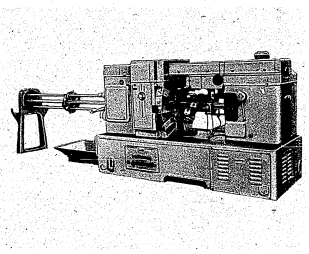
Maximum bar capacity ..... 4 mm

Single-Spindle Bar Automatic Machine, model 110

Maximum bar capacity ..... 7 mm

High Accuracy Single-Spindle Bar Automatic Machine, model 110 II

Maximum bar capacity ..... 7 mm



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Single-Spindle Forming and Cutting off Automatic Machine, model 1106

Maximum bar capacity ..... 12 mm

Single-Spindle Bar Automatic Machine, model 112

Maximum bar capacity ..... 12 mm

Single-Spindle Bar Automatic Machine, model 1117-25

Maximum bar capacity ..... 25 mm

Turret Single-Spindle Bar Automatic Machine, model 1 A 136

Maximum bar capacity ..... 36 mm

Four-Spindle Bar Automatic Machine, model 1225-4

Maximum bar capacity ..... 25 mm

Four-Spindle Bar Automatic Machine, model 123

Maximum bar capacity ..... 36 mm

Four-Spindle Bar Automatic Machine, model 1240-4

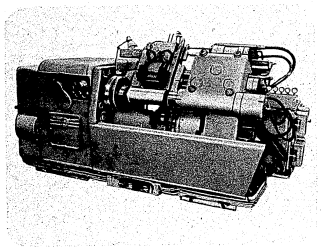
Maximum bar capacity ..... 40 mm

Four-Spindle Bar Automatic Machine, model 1262 M

Maximum bar capacity ..... 50 mm

Six-Spindle Bar Automatic Machine, model 1225-6

Maximum bar capacity ..... 25 mm



Six-Spindle Bar Automatic Machine, model 1240-6

Maximum bar capacity ..... 40 mm

Six-Spindle Bar Automatic Machine, model 1261 M

Maximum bar capacity ..... 58 mm

Six-Spindle Hydraulic Bar Automatic Machine, model 1 A 266

Maximum bar capacity ..... 60 mm

Four-Spindle Automatic Chucking Machine, model 1262 II

Maximum swing ..... 130 mm

Six-Spindle Automatic Chucking Machine, model 1261 II

Maximum swing ..... 130 mm

Vertical Continuous Six-Spindle Automatic Chucking Machine, model 128

Maximum swing ..... 250 mm

Vertical Six-Spindle Automatic Chucking Machine, model 1 A 283

Maximum swing ..... 300 mm

Vertical Six-Spindle Automatic Chucking Machine, model 1284

Maximum swing ..... 400 mm

Vertical Eight-Spindle Automatic Chucking Machine, model 1282

Maximum swing ..... 200 mm

Multitool Semiautomatic Lathe, model 1720

Maximum swing ..... 300 mm
Distance between centers ..... 300 mm

Multitool Semiautomatic Lathe, model 1730

Maximum swing ..... 410 mm
Distance between centers ..... 500 mm

Multitool Semiautomatic Lathe, model 116

Maximum swing ..... 200 mm
Distance between centers ..... 800 mm

Multitool Semiautomatic Lathe, model 1 Б 16

Maximum swing ..... 200 mm
Distance between centers ..... 1200 mm

Camshaft Multitool Semiautomatic Lathe, model 1891

Height of centers ..... 250 mm
Maximum distance between ends of spindles ..... 1085 mm

Camshaft Multitool Semiautomatic Lathe, model 1892

Height of centers ..... 250 mm
Maximum distance between ends of spindles ..... 1205 mm

Camshaft Multitool Semiautomatic Lathe, model 1893

Height of centers ..... 250 mm
Maximum distance between ends of spindles ..... 1140 mm

Single-Spindle Multitool Semiautomatic Lathe, model MP 5

Maximum swing ..... 250 mm
Maximum stroke of slides ..... 220 mm

Single-Spindle Hydraulic Multitool Semiautomatic Lathe, model 1731

Maximum swing ..... 320 mm
Distance between centers ..... 750 mm

Multitool Semiautomatic Lathe, model 118

Maximum swing ..... 600 mm
Distance between centers ..... 1000 mm

Double Spindle Semiautomatic Crankshaft Lathe, model 1841

Distance between center lines ..... 500 mm
Distance between ends of spindles .. 900 mm

Crankshaft Lathe, model 1845

Bore in cutting head revolving disc .. 1000 mm
Maximum diameter of pin that can be machined ..... 300 mm

Milling and Centering Semiautomatic Machine, model ФП 1

Maximum diameter of shaft admitted 150 mm
Maximum length of shaft admitted .. 500 mm

Milling and Centering Semiautomatic Machine, model ФП 2

Maximum diameter of shaft admitted 150 mm
Maximum length of shaft admitted .. 1100 mm

DRILLING MACHINES

Bench Type Drilling Machine, model 2106

Maximum drill capacity ..... 6 mm

Bench Type Drilling Machine, model НС 12 А

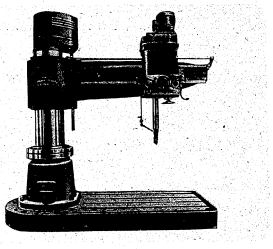
Maximum drill capacity ..... 12 mm

Bench Type Drilling Machine, model ЭСН 14

Maximum drill capacity ..... 14 mm

Vertical Drilling Machine, model 2118

Maximum drill capacity ..... 18 mm



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Vertical Drilling Machine, model 2 A 125

Maximum drill capacity ..... 25 mm

High Speed Vertical Drilling Machine, model 2 A 135

Maximum drill capacity ..... 35 mm

Vertical Drilling Machine, model Л 94

Maximum drill capacity ..... 50 mm

High Speed Vertical Drilling Machine, model 2 A 150

Maximum drill capacity ..... 50 mm

Vertical Drilling Machine, model 2170

Maximum drill capacity ..... 75 mm

Diamond Die Drilling Machine, model АФ 1

Minimum and maximum die hole 0.03—0.3 mm

Portable Radial Drilling Machine, model 2 А 592

Maximum drill capacity ..... 25 mm

Radial Drilling Machine, model 2 Б 53

Maximum drill capacity ..... 35 mm

Radial Drilling Machine, model 225

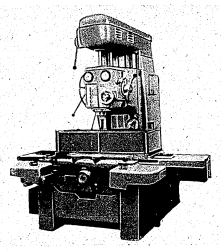
Maximum drill capacity ..... 50 mm

Radial Drilling Machine, model 257

Maximum drill capacity ..... 75 mm

Radial Drilling Machine, model 258

Maximum drill capacity ..... 100 mm



BORING MACHINES

Portable Boring Machine for Cylinder Blocks, model 2685

Minimum and maximum diameter that can be bored ..... 85—120 mm
Maximum length that can be bored.. 300 mm

Vertical Precision Boring Machine, model 2 B 697

Minimum and maximum diameter that can be bored ..... 76—165 mm
Maximum length that can be bored .. 410 mm

Vertical Precision Boring Machine, model 277 A

Minimum and maximum diameter that can be bored ..... 76—165 mm
Maximum length that can be bored .. 410 mm

Vertical Precision Boring Machine, model 2792

Maximum diameter that can be bored 165 mm
Maximum length that can be bored.. 450 mm

Two-Way Horizontal Precision Boring Machine, model 2 A 715

Minimum and maximum diameter that can be bored ..... 18—200 mm

Two-Way Horizontal Precision Semiautomatic Boring Machine, model 2 A 716

Minimum and maximum diameter that can be bored ..... 10—200 mm

Table Type Horizontal Boring, Drilling and Milling Machine, model 2613

Diameter of spindle ..... 62 mm
Working surface of table ..... 900 × 710 mm

Table Type Horizontal Boring, Drilling and Milling Machine, model 262 Г

Diameter of spindle ..... 85 mm
Working surface of table ..... 1000 × 800 mm

Table Type High-Speed Horizontal Boring, Drilling and Milling Machine, model 2621

Diameter of spindle ..... 85 mm
Working surface of table ..... 1000 × 800 mm

Table Type Horizontal Boring, Drilling and Milling Machine, model 262 Д

Diameter of spindle ..... 110 mm
Working surface of table ..... 1000 × 800 mm

Floor Type Horizontal Boring, Drilling and Milling Machine, model 2633

Diameter of spindle ..... 125 mm
Size of working plate ..... 4200 × 3500 mm

Floor Type Horizontal Boring, Drilling and Milling Machine, model 265 B

Diameter of spindle ..... 150 mm
Size of working plate ..... 6600 × 4000 mm

Table Type Horizontal Boring, Drilling and Milling Machine, model 2654

Diameter of spindle ..... 152 mm
Working surface of table .... 1800 × 1500 mm

Table Type Horizontal Boring, Drilling and Milling Machine, model 2655

Diameter of spindle ..... 152 mm
Working surface of table .... 3400 × 1500 mm

Floor Type Horizontal Boring, Drilling and Milling Machine, model 2657

Diameter of spindle ..... 152 mm
Size of working plate ..... 4600 × 4200 mm

Floor Type Horizontal Boring, Drilling and Milling Machine, model 2656

Diameter of spindle ..... 175 mm
Size of working plate ..... 4600 × 4200 mm

Jig Boring Machine, model 2430

Working surface of table ..... 450 × 280 mm

Jig Boring Machine, model KP 450

Working surface of table ..... 520 × 380 mm

Jig Boring Machine, model 2440

Working surface of table ..... 800 × 400 mm

Jig Boring Machine, model 2450

Working surface of table..... 1100 × 600 mm

GRINDING MACHINES

Precision Cylindrical Grinding Machine, model 3153

Maximum diameter that can be ground ..... 130 mm
Maximum length that can be ground 500 mm

Plunge Cut Cylindrical Grinding Machine, model 3152

Maximum diameter that can be ground ..... 200 mm
Maximum length that can be ground 500 mm

Precision Universal Cylindrical Grinding Machine, model 312

Maximum diameter that can be ground ..... 200 mm
Maximum length that can be ground 500 mm

Universal Cylindrical Grinding Machine, model 3 Г 12 M

Maximum diameter that can be ground ..... 200 mm
Maximum length that can be ground 750 mm

Cylindrical Grinding Machine, model 3151

Maximum diameter that can be ground ..... 200 mm
Maximum length that can be ground 750 mm

Precision Cylindrical Grinding Machine, model 3151 II

Maximum diameter that can be ground ..... 200 mm
Maximum length that can be ground 750 mm

Cylindrical Grinding Machine for Roller Bearing Races, model 3486

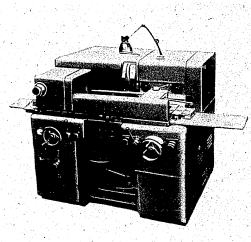
Maximum diameter that can be ground ..... 300 mm
Maximum length that can be ground 240 mm

Universal Cylindrical Grinding Machine, model 3130

Maximum diameter that can be ground ..... 300 mm
Maximum length that can be ground 750 mm

Cylindrical Grinding Machine, model 3160 A

Maximum diameter that can be ground ..... 300 mm
Maximum length that can be ground 1000 mm



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Plunge Cut Cylindrical Grinding Machine, model 3162

Maximum diameter that can be ground ..... 300 mm
Maximum length that can be ground 1000 mm

Cylindrical Grinding Machine, model 3164 A

Maximum diameter that can be ground ..... 350 mm
Maximum length that can be ground 3000 mm

Cylindrical Grinding Machine with Angular Wheel Slides, model 3 T 16

Maximum diameter that can be ground ..... 400 mm
Maximum length that can be ground 1000 mm

Cylindrical Grinding Machine, model 3164

Maximum diameter that can be ground ..... 400 mm
Maximum length that can be ground 2000 mm

Cylindrical Grinding Machine, model 3172

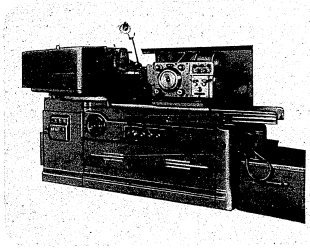
Maximum diameter that can be ground ..... 550 mm
Maximum length that can be ground 4000 mm

Crankshaft Regrinding Machine, model 3420

Maximum diameter of crankshaft that can be ground ..... 400 mm
Maximum length of crankshaft that can be ground ..... 1100 mm

Semiautomatic Crankshaft Pin Grinding Machine, model 3421

Maximum diameter of crankshaft that can be ground..... 510 mm
Maximum length of crankshaft that can be ground ..... 1100 mm



Crankshaft Regrinding Machine, model 3423

Maximum diameter of crankshaft that can be ground..... 600 mm
Maximum length of crankshaft that can be ground ..... 1600 mm

Semiautomatic Camshaft Grinding Machine, model 3430

Maximum diameter of camshaft that can be ground ..... 150 mm
Maximum length of camshaft that can be ground ..... 900 mm

Camshaft Regrinding Machine, model 3433

Maximum diameter of camshaft that can be ground ..... 190 mm
Maximum length of camshaft that can be ground ..... 1260 mm

Horizontal Spindle Surface Grinding Machine, model 371

Working surface of table ..... 600 × 200 mm
Maximum height of work that can be ground ..... 250 mm

Vertical Spindle Surface Grinding Machine, model 373

Working surface of table ..... 750 × 300 mm
Maximum height of work that can be ground ..... 350 mm

Horizontal Spindle Surface Grinding Machine, model 372 Б

Working surface of table .... 1000 × 300 mm
Maximum height of work that can be ground ..... 400 mm

Horizontal Spindle Surface Grinding Machine, model 3724

Working surface of table ..... 2000×400 mm
Maximum height of work that can be ground ..... 600 mm

Horizontal Spindle Surface Grinding Machine, model 3740

Magnetic table diameter ..... 400 mm
Maximum height of work that can be ground ..... 125 mm

Vertical Spindle Surface Grinding Machine, model 3756

Magnetic table diameter ..... 750 mm
Maximum height of work that can be ground ..... 350 mm

Dual Automatic Surface Grinding Machine, model 3772 Э

Magnetic table diameter ..... 1000 mm
Maximum height of work that can be ground..... 250 mm

Horizontal Spindle Surface Grinding Machine, model 375

Magnetic table diameter ..... 1500 mm
Maximum height of work that can be ground ..... 600 mm

Way Surface Grinding Machine, model 3544

Maximum size of work that can be ground (length × width × height) 4000 × 1200 × 1200 mm

Internal Grinding Machine, model 3A 240

Maximum diameter of hole that can be ground ..... 100 mm
Maximum length of hole that can be ground ..... 125 mm

Internal Semiautomatic Grinding Machine, model 3251

Maximum diameter of hole that can be ground ..... 100 mm
Maximum length of hole that can be ground ..... 125 mm

Internal Grinding Machine, model 3A 250

Maximum external diameter of work 400 mm
Maximum diameter of hole that can be ground ..... 200 mm
Maximum length of hole that can be ground ..... 200 mm

Internal Grinding Machine, model 3260

Maximum external diameter of work 700 mm
Maximum diameter of hole that can be ground ..... 500 mm
Maximum length of hole that can be ground ..... 400 mm

Centerless Automatic Internal Grinding Machine, model 3263

Minimum and maximum external diameter of work ..... 70—200 mm
Minimum and maximum diameter of hole that can be ground ..... 60—185 mm
Maximum length of hole that can be ground ..... 100 mm

Centerless Grinding Machine, model СБШ 02

Minimum and maximum diameter that can be ground ..... 3—75 mm

Centerless Grinding Machine, model 3180

Minimum and maximum diameter that can be ground ..... 5—75 mm
Maximum length that can be ground with standard work rest ..... 180 mm

Centerless Grinding Machine, model 3182

Minimum and maximum diameter that can be ground ..... 70—150 mm
Maximum length that can be ground with standard work rest ..... 250 mm

Centerless Lapping Machine, model 3867

Minimum and maximum diameter that can be lapped ..... 6—150 mm

Thread Grinding Machine, model 5824

Maximum diameter that can be ground ..... 150 mm
Maximum length that can be ground 1400 mm
Distance between centers ..... 1600 mm

Universal Thread Grinding Machine, model 582

Minimum and maximum diameter of external thread that can be ground 5—250 mm
Maximum length of external thread that can be ground ..... 500 mm
Maximum diameter of internal thread that can be ground ..... 170 mm
Distance between centers ..... 700 mm

Worm Thread Grinding Machine, model 5883 A

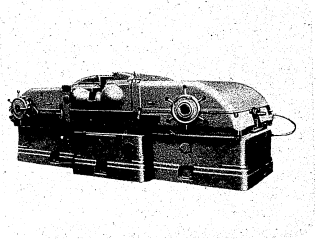
Minimum and maximum diameter of worm ..... 60—300 mm
Maximum length of thread that can be ground ..... 400 mm
Distance between centers ..... 700 mm

Spline Grinding Machine, model 345 A

Maximum diameter that can be ground 120 mm
Maximum length that can be ground 800 mm
Distance between centers ..... 1000 mm

Spline Grinding Machine, model 3451 A

Maximum diameter that can be ground 150 mm
Maximum length that can be ground 1000 mm
Distance between centers ..... 1200 mm



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Semiautomatic Radius Grinder for Roller Ring Shoulders, model ЛГ 3 12 М

Maximum internal ring diameter .. 120 mm

Semiautomatic Radius Grinder for Internal Ball Bearing Rings, model ЛГ 3 9 М

Maximum groove diameter ..... 150 mm
Maximum groove profile radius .... 10 mm

Semiautomatic Radius Grinder for External Ball Bearing Rings, model ЛГ 3 8 М

Maximum ring diameter ..... 200 mm
Maximum groove profile radius .... 20 mm

Semiautomatic Radius Grinder for External Ball Bearing Rings, model ЛГ 3 5 М

Maximum ring diameter ..... 200 mm
Maximum groove profile radius .... 100 mm

Semiautomatic Radius Grinder for Internal Ball Bearing Rings, model ЛГ 3 26

Maximum internal ring diameter .. 40 mm
Maximum groove profile radius .... 10 mm

Ball Filing Machine, model МШ 32

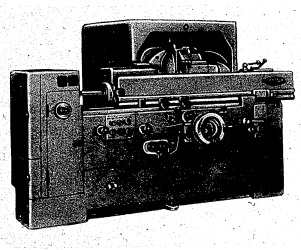
Maximum ball diameter ..... 27 mm

Ball Grinding Machine, model МШ 33

Maximum ball diameter ..... 32 mm

Optical Profile Grinding Machine, model 395 М

Maximum size of work:
length ..... 150 mm
width ..... 60 mm
depth ..... 48 mm
Magnification of optical system .... 50 : 1



Double Spindle Automatic Piston Ring Grinder, model 3317

Minimum and maximum piston ring diameter ..... 75—180 mm

Roll Grinding Machine, model 3417 В

Maximum roll diameter ..... 1500 mm
Maximum roll length ..... 6000 mm

Vertical Honing Machine, model ОФ 3

Minimum and maximum diameter of hole that can be honed ..... 3—20 mm
Maximum length of hole that can be honed ..... 200 mm

Vertical Honing Machine, model ОФ 20

Maximum diameter of hole that can be honed ..... 50 mm
Maximum lenght of hole that can be honed ..... 250 mm

Vertical Honing Machine, model 383

Minimum and maximum diameter of hole that can be honed ..... 85—150 mm
Maximum length of hole that can be honed ..... 450 mm

Vertical Honing Machine, model 3 А 833

Minimum and maximum diameter of hole that can be honed ..... 80—165 mm
Maximum length of hole that can be honed ..... 420 mm

Vertical Honing Machine, model 384

Maximum diameter of hole that can be honed ..... 200 mm
Maximum length of hole that can be honed ..... 1200 mm

Universal Two-Spindle Lapping Machine, model 3816

Maximum diameter of lapping wheels 600 mm
Maximum size of work that can be lapped, (diameter, height × length) .. 95 × 160 mm

TOOL AND CUTTER GRINDING MACHINES

Universal Cutter and Tool Grinding Machine, model 3 Б 64

Height of centers ..... 100 mm
Distance between centers ..... 395 mm

Hydraulic Universal Cutter and Tool Grinding Machine, model 3 Г 64

Height of centers ..... 125 mm
Distance between centers ..... 650 mm

Universal Cutter and Tool Grinding Machine, model 3 А 64

Height of centers ..... 125 mm
Distance between centers ..... 650 mm

Tool Lapping Machine, model 3818

Minimum and maximum dimensions of tools that can be lapped ..... 6 × 6 — 40 × 40 mm

Carbide Tool Grinding Machine, model 3628

Maximum dimensions of tools that can be ground ..... 50 × 50 mm

Tool Grinding Machine, model 3625

Maximum dimensions of tools that can be ground ..... 50 × 50 mm

Electric Erosion Carbide Tool Grinder, model 4352

Maximum dimensions of tools that can be ground ..... 30 × 45 mm

Drill Grinding Semiautomatic Machine, model 3659

Minimum and maximum diameter of drills that can be ground ..... 10—80 mm

Hob Grinding Semiautomatic Machine, model 3 А 642

Maximum diameter of hob that can be ground ..... 200 mm
Distance between centers ..... 500 mm

Cutter Grinding Machine, model 3667

Minimum and maximum diameter of cutter that can be ground .... 150—700 mm

Broach Sharpening Machine, model 360

Maximum broach diameter ..... 100 mm
Maximum broach length ..... 1500 mm

Chain Saw Link Sharpening Machine, model КПШ

Grinding wheel diameter ..... 100 mm
Grinding wheel width ..... 3 mm

Circular Saw Sharpening Machine, model 3692

Minimum and maximum diameter of saw that can be sharpened .. 400—1200 mm

Crown Drill Grinding Machine, model 367

Diameter of grinding wheels ..... 500 mm

Bench Type Tool Sharpening Machine, model ЭЗС 2

Diameter of grinding wheels ..... 200 mm

Rough Grinding Machine with flexible shaft, model 3382

Grinding wheel diameter ..... 200 mm
Length of flexible shaft ..... 2500 mm

Swing Frame Grinding Machine, model 3374 К

Grinding wheel diameter ..... 400 mm
Grinding wheel width ..... 40 mm

Swing Frame Grinding Machine, model 3374

Grinding wheel diameter ..... 500 mm
Grinding wheel width ..... 63 mm

Double-Ended Disc Grinding Machine, model 3 М 634

Diameter of grinding wheels ..... 400 mm
Width of grinding wheels ..... 40 mm

Double-Ended Disc Grinding Machine, model 3 М 636

Diameter of grinding wheels ..... 600 mm
Width of grinding wheels ..... 75 mm

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Double-Ended Disc Grinding Machine, model 3327

Diameter of grinding wheels ..... 750 mm
Width of grinding wheels ..... 22 mm

Vertical Spindle Disc Grinding Machine, model 3 A 332

Grinding wheel diameter ..... 750 mm
Grinding wheel width ..... 16 mm

GEAR CUTTING AND GEAR FINISHING MACHINES

Multiple Spindle Spur and Bevel Gear Cutting Machine (rough cutting), model E3 1

Maximum gear diameter that can be cut:
- Two-Spindle Machine ..... 350 mm
- Three-Spindle Machine ..... 150 mm
- Four-Spindle Machine ..... 100 mm

Maximum module that can be cut:
- Two-Spindle Machine ..... 8 mm
- Three-Spindle Machine ..... 6 mm
- Four-Spindle Machine ..... 4 mm

Universal Gear Hobbing Machine, model 532

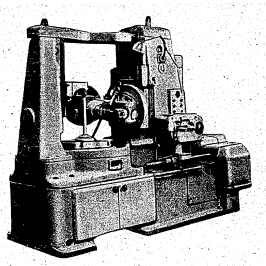
Maximum gear diameter that can be cut:
- Spur gear ..... 750 mm
- Helical gear ..... 500 mm

Maximum module that can be cut .. 8 mm

Universal Gear Hobbing Machine, model 5 Д 32

Maximum gear diameter that can be cut:
- Spur gear ..... 800 mm
- Helical gear ..... 500 mm

Maximum module that can be cut .. 8 mm



Gear Hobbing Machine, model 5 A 326

Maximum gear diameter that can be cut:
- Spur gear ..... 750 mm
- Helical gear ..... 600 mm

Maximum module that can be cut .. 10 mm

Semiautomatic Spur Gear Cutting Machine (rough cutting), model E3 5

Maximum gear diameter that can be cut ..... 800 mm
Maximum module that can be cut .. 12 mm

Universal Gear Hobbing Machine, model 5327

Maximum gear diameter that can be cut:
- Spur gear ..... 1000 mm
- Helical gear ..... 650 mm

Maximum module that can be cut .. 12 mm

Universal Gear Hobbing Machine, model 5330

Maximum gear diameter that can be cut ..... 1500 mm
Maximum module that can be cut .. 20 mm

Universal Gear Hobbing Machine, model 5353

Maximum gear diameter that can be cut ..... 3000 mm
Maximum module that can be cut .. 30 mm

Universal Gear Hobbing Machine, model 5355 A

Maximum gear diameter that can be cut ..... 5000 mm
Maximum module that can be cut .. 40 mm

Universal Semiautomatic Gear Hobbing Machine, model 5310

Maximum gear diameter that can be cut:
- Spur gear ..... 200 mm
- Helical gear ..... 180 mm

Maximum module that can be cut .. 4 mm

Semiautomatic Hydraulic Gear Hobbing Machine, model 5325

Maximum gear diameter that can be cut ..... 450 mm
Maximum module that can be cut .. 6 mm

Fine Pitch Gear Shaper, model 5107

Maximum gear diameter that can be cut ..... 75 mm
Minimum and maximum module that can be cut ..... 0.2—1 mm

Gear Shaper, model 514

Maximum gear diameter that can be cut ..... 462 mm
Minimum and maximum module that can be cut ..... 2—6 mm

Gear Shaper, model 5150

Maximum gear diameter that can be cut ..... 800 mm
Maximum module that can be cut .. 12 mm

Gear Shaper, model 5161

Maximum gear diameter that can be cut ..... 1250 mm
Maximum module that can be cut .. 8 mm

Straight Bevel Gear Generator, model 523

Maximum gear pitch diameter that can be cut ..... 110 mm
Maximum module that can be cut .. 2.5 mm

Spiral and Hypoid Bevel Gear Generator, model 5 П 23 A

Maximum gear pitch diameter that can be cut ..... 125 mm
Maximum module that can be cut .. 3 mm

Straight Bevel Gear Generator, model 526

Maximum gear pitch diameter that can be cut ..... 610 mm
Maximum module that can be cut .. 8 mm

Spiral and Hypoid Bevel Gear Generator, model 5 A 27 C 1

Maximum gear pitch diameter that can be cut ..... 450 mm
Maximum module that can be cut .. 10 mm

Spiral and Hypoid Bevel Gear Generator, model 528

Maximum gear pitch diameter that can be cut ..... 840 mm
Maximum module that can be cut .. 15 mm

Gear Shaving Machine, model 5715

Maximum gear diameter ..... 450 mm
Maximum module ..... 8 mm

Gear Shaving Machine, model 5717

Maximum gear diameter ..... 1250 mm
Maximum module ..... 8 mm

Precision Gear Grinding Machine, model 5832

Maximum gear diameter ..... 200 mm
Minimum and maximum module .. 0.2—2 mm

Gear Grinding Machine, model 5831

Maximum gear diameter ..... 300 mm
Minimum and maximum module .. 1.5—6 mm

Gear Grinding Machine, model 5 П 84

Maximum gear diameter ..... 450 mm
Maximum module ..... 10 mm

Gear Sound Tester, model 5798

Distance between center lines of gears to be tested:
- maximum ..... 220 mm
- minimum ..... 130 mm

Universal Gear Tester, model 5725

Maximum gear diameter ..... 500 mm

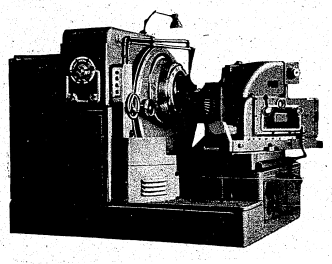
BOLT THREADING AND NUT TAPPING MACHINES

Bolt Threading Machine, model 9101 Б

Maximum thread diameter ..... 38 mm
Maximum thread length ..... 280 mm

Bolt Threading Machine, model 5 Б 07

Maximum thread diameter ..... 39 mm
Maximum thread length ..... 330 mm



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Two-Spindle Automatic Nut Tapping Machine, model 5084

Size of thread to be cut M-5; M-6
Maximum slide stroke ..... 20 mm

Two-Spindle Automatic Nut Tapping Machine, model 5085

Size of thread to be cut ..... M-8 and M-10
Stroke of slide ..... 38 and 45 mm

Two-Spindle Automatic Nut Tapping Machine, model 5086

Size of thread to be cut ..... M-12 and M-16
Stroke of slide ..... 60 and 63 mm

MILLING MACHINES

Horizontal Milling Machine, model 680 M

Working surface of table ..... 750 × 225 mm

Horizontal Milling Machine, model 6 H 81 Г

Working surface of table .... 1000 × 250 mm

Horizontal Milling Machine, model 6 H 82 Г

Working surface of table .... 1250 × 320 mm

Horizontal Milling Machine, model 6 H 83 Г

Working surface of table .... 1600 × 400 mm

Vertical Milling Machine, model 610 Г

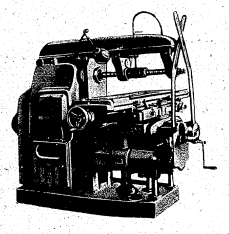
Working surface of table ..... 750 × 225 mm

Vertical Milling Machine, model 6 H 11

Working surface of table .... 1000 × 250 mm

Vertical Milling Machine, model 6 H 12

Working surface of table .... 1250 × 320 mm



Vertical Milling Machine with Electrical Profiling and Contour Milling Device, model 6 П 12

Working surface of table .... 1250 × 320 mm

Vertical Milling Machine, model 6 H 13

Working surface of table .... 1600 × 400 mm

High Speed Vertical Milling Machine, model 6 H 13 Б

Working surface of table ..... 1600 × 400 mm

High Speed Vertical Milling Machine, model 6 A 541

Working surface of table .... 2200 × 650 mm

Universal Tool Room Milling Machine, model 678 M

Working surface of table ..... 550 × 195 mm

Universal Tool Room Milling Machine, model 679

Working surface of table ..... 700 × 260 mm

Universal Milling Machine, model 6 H 81

Working surface of table .... 1000 × 250 mm

Universal Milling Machine, model 6 H 82

Working surface of table .... 1250 × 320 mm

Universal Milling Machine, model 6 H 83

Working surface of table .... 1600 × 400 mm

Single-Spindle Bed Type Milling Machine, model A 662 B

Working surface of table .... 1600 × 450 mm

Two-Spindle Bed Type Milling Machine, model A 662

Working surface of table .... 1600 × 450 mm

Three-Spindle Planer Type Milling Machine, model 6632

Working surface of table .... 2200 × 650 mm

Four-Spindle Planer Type Milling Machine, model 6642

Working surface of table .... 3000 × 900 mm

Special Planer Type Milling Machine for Tubings, model 6 AC 5

Working surface of table .... 5500 × 1000 mm

Four-Spindle Planer Type Milling Machine, model 6652

Working surface of table .... 4250 × 1250 mm

Four-Spindle Planer Type Milling Machine, model 6654

Working surface of table .... 8500 × 1250 mm

Four-Spindle Planer Type Milling Machine, model 6662

Working surface of table .... 6000 × 1800 mm

Planer Type Milling Machine, model 6672

Working surface of table .... 8500 × 2500 mm

Duplex Vertical Spindle Continuous Milling Machine, model 621

Table diameter ..... 1000 mm
Distance, spindle noses to top of table:
minimum 0
maximum ..... 450 mm

Duplex Vertical Spindle Continuous Milling Machine, model 623

Table diameter ..... 1500 mm
Distance, spindle noses to top of table:
minimum ..... 100 mm
maximum ..... 600 mm

Three-Spindle Vertical Continuous Milling Machine, model 623 B

Table diameter ..... 1500 mm
Distance, spindle noses to top of table:
minimum ..... 200 mm
maximum ..... 650 mm

Drum Type Four-Spindle Milling Machine, model 6021

Drum diameter ..... 1000 mm
Length of drum ..... 450 mm
Distance between columns ..... 700 mm

Drum Type Four-Spindle Milling Machine, model 6022

Drum diameter ..... 1000 mm
Length of drum ..... 650 mm
Distance between columns ..... 900 mm

Drum Type Four-Spindle Milling Machine, model 6023

Drum diameter ..... 1000 mm
Length of drum ..... 900 mm
Distance between columns ..... 1150 mm

Spline Hobbing Machine, model 5618

Maximum diameter ..... 270 mm
Maximum length that can be machined 500 mm
Distance between centers ..... 550 mm

Universal Spline Hobbing Machine, model 5606

Maximum diameter ..... 600 mm
Maximum length that can be machined 3000 mm

Keyway Milling Machine, model 692 A

Working surface of table ..... 900 × 250 mm
Maximum length of keyway ..... 300 mm
Maximum width of keyway ..... 24 mm

Two-Dimensional Pantograph Milling Machine, model 6463

Working surface of table ..... 300 × 200 mm
Range of milling ratio ..... from 1 : 1 to 1 : 50
Depth of milling ..... 1 mm

Three-Dimensional Pantograph Milling Machine, model 6461

Working surface of table ..... 300 × 200 mm
Range of milling ratio .... from 1 : 1.5 to 1 : 8
Depth of milling with ratio 1 : 2 .... 20 mm

Two-Dimensional Hydraulic Contour Milling Machine, model ОФ 8

Working surface of table ..... 800 × 300 mm
Dimensions of work that can be machined ..... 625 × 250 mm

Profile Milling Machine for Propeller Blades, model ГФ 41

Maximum diameter of propeller .... 1000 mm

Profiling and Contour Milling Semiautomatic Machine with Electronic Control, model 6441 A

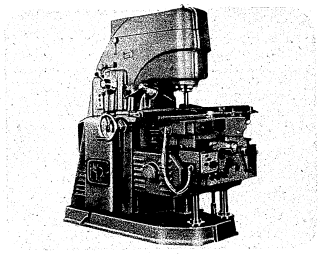
Working surface of table..... 1200 × 600 mm
Dimensions of work that can be machined:
length ..... 900 mm
width ..... 500 mm
height ..... 250 mm

Thread Milling Machine, model 5 М 5 Б 62

Diameter of thread that can be machined:
external thread ..... 100 mm
internal thread ..... 30 mm
Distance between centers ..... 500 mm

Tyre Milling Machine, model ВШФ 16

Maximum tyre width ..... 160 mm
Maximum tyre thickness ..... 30 mm



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Rail Face Milling Machine, model 1 C 01

Diameter of face cutter ..... 500 mm
Maximum spindle travel ..... 100 mm

Beam and Column Face Milling Machine, model 6991

Maximum size of face ..... 1800 × 3600 mm
Minimum and maximum length of work ..... 6000—14000 mm

SHAPING AND PLANING MACHINES

Openside Planer, model 7134

Maximum dimensions of work that can be machined:
length ..... 3000 mm
width ..... 1000 mm
height ..... 850 mm

Openside Planer, model 7142 A

Maximum dimensions of work that can be machined:
length ..... 6000 mm
width ..... 1500 mm
height ..... 1250 mm

Double Housing Planer, model 7231 A

Maximum dimensions of work that can be machined:
length ..... 3000 mm
width ..... 1000 mm
height ..... 1000 mm

Hydraulic Double Housing Planer, model 7231

Maximum dimensions of work that can be machined:
length ..... 3000 mm
width ..... 1000 mm
height ..... 1000 mm

Double Housing Planer, model 724 M

Maximum dimensions of work that can be machined:
length ..... 4000 mm
width ..... 1500 mm
height ..... 1250 mm

Double Housing Planer, model 7242 A

Maximum dimensions of work that can be machined:
length ..... 6000 mm
width ..... 1500 mm
height ..... 1250 mm

Double Housing Planer, model 7256

Maximum size of work that can be machined:
length ..... 6000 mm
width ..... 2000 mm
height ..... 1500 mm

Shaper, model 735

Length of stroke ..... 500 mm

Shaper, model 7 A 35

Length of stroke ..... 525 mm

Shaper, model 736

Length of stroke ..... 650 mm

Hydraulic Shaper, model 7 A 36

Length of stroke ..... 700 mm

Hydraulic Shaper, model 737

Length of stroke ..... 900 mm

Plate Edge Planing Machine, model НЖ 9

Maximum height of planing ..... 30 mm
Maximum length of planing ..... 6000 mm

SLOTTING AND BROACHING MACHINES

Slotter, model 7412

Maximum stroke ..... 100 mm

Slotter, model 7417

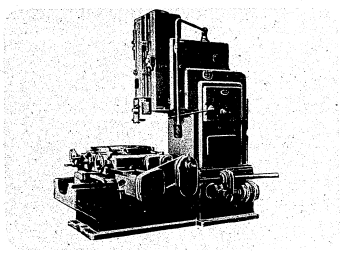
Maximum stroke ..... 160 mm

Hydraulic Slotter, model 7430

Maximum stroke ..... 380 mm

Hydraulic Slotter, model 7450

Maximum stroke ..... 500 mm



Hydraulic Slotter, model 745

Maximum stroke ..... 900 mm

Horizontal Internal Broaching Machine, model 7520

Normal pulling capacity ..... 20 000 kg

Horizontal Semiautomatic Internal Broaching Machine, model 7530

Normal pulling capacity ..... 30 000 kg

Horizontal Internal Broaching Machine, model 7540

Normal pulling capacity ..... 40 000 kg

Horizontal Internal Broaching Machine, model 7552

Normal pulling capacity ..... 100 000 kg

Vertical External and Internal Broaching Machine, model 7710

Normal pulling capacity ..... 10 000 kg

Vertical External Broaching Machine, model 7720

Normal pulling capacity ..... 20 000 kg

Duplex Ram Surface Broaching Machine, model 7720 Д

Normal pulling capacity ..... 20 000 kg

CUTTING-OFF MACHINES

Sawing Machine, model P 2

Maximum diameter of material that can be cut ..... 200 mm
Saw blade diameter ..... 600 mm

Hydraulic Hack Sawing Machine, model 872

Maximum diameter of material that can be cut ..... 220 mm
Hack saw blade length ..... 450 mm

Hydraulic Sawing Machine, model 866

Maximum diameter of material that can be cut ..... 240 mm
Saw blade diameter ..... 710 mm

Hydraulic Sawing Machine, model 867

Maximum diameter of material that can be cut ..... 350 mm
Saw blade diameter ..... 1000 mm

Hydraulic Sawing Machine, model 868

Maximum diameter of material that can be cut ..... 500 mm
Saw blade diameter ..... 1400 mm

PIPE CUTTING AND PIPE THREADING MACHINES

Two-Spindle Vertical Coupling Boring Machine, model 1 A 290 II

Minimum and maximum coupling diameter ..... 40—105 mm
Minimum and maximum coupling length ..... 95—205 mm

Coupling Cutting-Off Machine, model 9 Г 163

Minimum and maximum coupling external diameter that can be cut-off ..... 55—250 mm
Minimum and maximum length of coupling ..... 95—240 mm

Coupling Cutting-Off Machine, model 9167

Minimum and maximum coupling external diameter that can be cut-off ..... 136—450 mm
Minimum and maximum length of coupling ..... 30—245 mm

Double-Spindle Vertical Coupling Threading Machine, model 9 B 112

Range of coupling diameters that can be machined ..... $1^1/_2$″—$4^1/_2$″
Maximum length of thread that can be cut ..... 100 mm

Double-Spindle Vertical Coupling Threading Machine, model 9 B 113

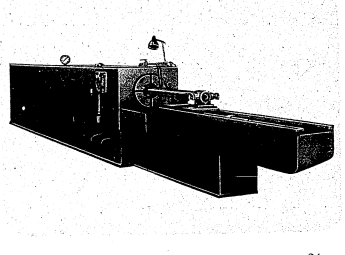
Range of coupling diameters that can be machined ..... $2^7/_8$″—$8^5/_8$″
Maximum length of thread that can be cut ..... 100 mm

Pipe Cutting-Off Machine, model 9152

Range of pipe diameters that can be cut-off ..... 38—150 mm
Minimum and maximum length of pipe that can be cut-off ..... 100—450 mm

Pipe Cutting-Off Machine, model 9 Г 153

Range of pipe diameters that can be cut-off ..... 100—250 mm
Minimum and maximum length of pipe that can be cut-off ..... 100—400 mm



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Pipe Threading Machine, model 914

Maximum pipe diameter that can be machined: model 914A ..... 170 mm
model 914Б ..... 190 mm

Pipe Threading Machine, model 1983

Range of pipe diameters that can be machined ..... 70—250 mm

Pipe Threading Machine, model 9 B 143

Range of pipe diameters that can be machined ..... $1^1/_2$"—$8^5/_8$"

Pipe Threading Machine, model 9 B 145

Range of pipe diameters that can be machined ..... $4^1/_2$"—$16^3/_4$"

MISCELLANEOUS MACHINES

Dynamic Balancing Machine, model 9725

Weight of work ..... 4—90 kg

Dynamic Balancing Machine, model 9734

Weight of work ..... 300—3200 kg

Dynamic Balancing Machine, model 9736

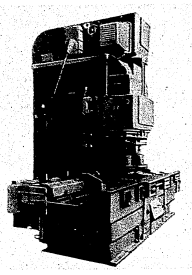
Weight of work ..... 1000—10000 kg

Dynamic Balancing Machine, model 9736A

Weight of work ..... 1000—16000 kg

Profiling Electric Erosion Machine, model 4723

Working surface of table ..... 500 × 400 mm
Maximum height of work ..... 250 mm



Electric Erosion Cutting-Off Machine, model 4821

Maximum diameter of work that can be cut-off ..... 150 mm
Maximum length of work that can be cut-off with stop ..... 500 mm

Round Split Die Chamfer Relieving Machine, model 8

Minimum and maximum thread diameter ..... 3—36 mm

Round Split Die Chamfer Grinder, model 7A

Minimum and maximum thread diameter ..... 4—36 mm

Round Split Die Grinder, model 27

Minimum and maximum thread diameter ..... 3—52 mm

Tap Flute Grinder, model 1

Maximum slide stroke ..... 40 mm

Tap Chamfer Relieving Machine, model M 4

Minimum and maximum tap diameter ..... 2—20 mm

Round Split Die Thread Cutting Machine, model 9 Б

Minimum and maximum thread diameter: cutting ..... 4—6 mm
sizing ..... 6—20 mm

Round Split Die Sizing Machine, model 55

Minimum and maximum thread diameter ..... 20—39 mm

Machine for Broaching Tap Shank Square, model 12

Minimum and maximum size of square ..... 4—9.5 mm

Tap Shank Polishing Machine, model 40 Б

Speed of regulating wheel ..... 33 r. p. m.
Speed of grinding wheel ..... 1200 r. p. m.

Automatic Machine for Marking Round Pieces, model 36 A

Minimum and maximum diameter of work ..... 6—60 mm

Tap Blank Centering Machine, model 38 B

Minimum and maximum diameter of blank ..... 8—16 mm

File Cutting Machine, model ПНТ

Minimum and maximum file length ..... 40—400 mm

Wood-Turning Lathe, model ТД 4

Height of centers ..... 150 mm
Distance between centers ..... 800 mm

Wood-Turning Lathe, model ТД 2 М

Height of centers ..... 160 mm
Distance between centers ..... 1100 mm

Wood-Turning Lathe, model ТД 180

Height of centers ..... 180 mm
Distance between centers ..... 1000 mm

Wood-Turning Lathe, model ТД 200

Height of centers ..... 200 mm
Distance between centers ..... 1000 mm

Band Sawing Machine, model ЛП 1

Working surface of table ..... 400 × 400 mm

Band Sawing Machine, model ЛС 80

Diameter of saw wheels ..... 800 mm
Maximum width of saw ..... 35 mm
Maximum width that can be sawn .. 715 mm

Circular Resawing Machine (for Sleepers), model ЦДТ 4

Maximum log diameter ..... 500 mm
Maximum log length ..... 6500 mm

Two-Spindle Cut-Off Dimension Saw, model ЦД 3

Maximum width of board ..... 650 mm
Minimum and maximum width of finished board ..... 60—360 mm
Maximum height of cut ..... 150 mm

Two-Spindle Cut-Off Dimension Saw with Hydraulic Control, model ЦД 4

Maximum width of board ..... 650 mm
Minimum and maximum width of finished board ..... 60—360 mm
Maximum height of cut ..... 150 mm

Automatic Feed Circular Saw, model ЦА

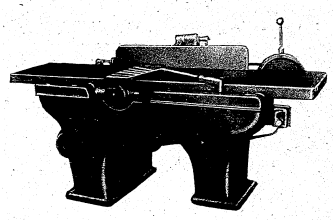
Maximum height that can be sawn .. 80 mm
Minimum and maximum width of board ..... 8—300 mm
Minimum length of board that can be sawn ..... 665 mm

Chain Feed Circular Saw, model ЦДК 4

Maximum height that can be sawn .. 100 mm
Maximum width of board that can be sawn ..... 600 mm
Minimum length of board that can be sawn ..... 200 mm

Roller Feed Circular Saw, model ЦР 2

Maximum height of cut ..... 250 mm
Minimum and maximum thickness of timber ..... 10—75 cm



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Roller Feed Circular Saw, model ЦР 3

Maximum height of cut ..... 250 mm
Maximum thickness of timber ..... 12 mm

Circular Saw, model Ц 2 М

Maximum height that can be sawn .. 120 mm
Maximum width of board ..... 400 mm

Circular Saw, model Ц 3

Maximum height that can be sawn .. 120 mm
Maximum width of board ..... 400 mm

Circular Saw, model Ц 5

Maximum height that can be sawn .. 130 mm
Maximum width of board ..... 400 mm

Circular Saw, model КС 400

Diameter of saw ..... 400 mm

Petrol Chain Saw, model "Ural"

Maximum log diameter that can be cut..... 750 mm

Electric Chain Saw, model ЭП 2-500

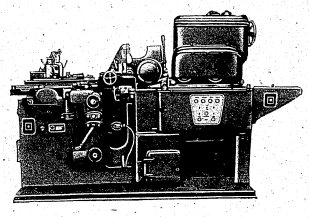
Maximum log diameter that can be sawn ..... 500 mm
Width of cut ..... 12 mm

Elektric Chain Saw, model ЭП 2-740

Maximum log diameter that can be cut ..... 740 mm
Width of cut ..... 12 mm

High Frequency Electric Chain Saw, model К 5

Maximum log diameter that can be sawn ..... 470 mm
Width of cut ..... 7 mm



Swiveling Cut-Off Saw, model ЦБ 3

Maximum diameter of cut ..... 350 mm
Diameter of saw ..... 1000 mm

Circular Saw Bench, model ЦП 2

Working surface of table .... 1120 × 680 mm
Diameter of saw ..... 500 mm

Circular Saw Bench, model ЦПД 1

Working surface of table .... 600 × 1000 mm
Diameter of saw ..... 500 mm

Lever Cut-Off Saw, model ЦКБ 3

Maximum thickness of cut ..... 150 mm
Maximum width of cut ..... 350 mm

Three-Saw Edger, model ЦК 32

Maximum height of cut ..... 130 mm
Maximum width of timber ..... 300 mm

Swing Saw, model ЦМЭ

Maximum diameter of saw ..... 500 mm

Circular Saw, model ЦЭ 4

Maximum height of cut ..... 130 mm
Maximum diameter of saw ..... 500 mm

Universal Sawing, Shaping and Boring Machine, model УН

Maximum thickness that can be machined ..... 100 mm
Maximum width that can be machined ..... 500 mm

Universal Sawing, Shaping and Boring Machine, model УДС 2

Power feed:
sawing ..... 38 m/min.
drilling ..... 3—5 „
thicknessing ..... 7.8 „
planing ..... 18.8 „

Universal Sawing, Planing and Boring Machine, model ДХ 19 Р

Working surface of planing table ..... 1400 × 230 mm
Working surface of sawing table 900 × 300 mm

Universal Sawing, Planing and Boring Machine, model ДХ 19 А

Working surface of planing table ..... 1400 × 250 mm
Working surface of sawing table 900 × 280 mm

Universal Sawing, Planing and Boring Machine, model ДХ 19

Working surface of planing table ..... 1500 × 300 mm
Working surface of sawing table 500 × 300 mm

Planing Machine, model СФ 2

Maximum width of planing ..... 200 mm
Total length of tables ..... 1000 mm

Planing Machine, model ФУГ 1

Maximum width of planing ..... 350 mm
Working surface of table ..... 525 × 350 mm

Planing Machine, model СФ 4

Maximum width of planing ..... 400 mm

Planing Machine, model СФ 4-3

Maximum width of planing ..... 400 mm
Total length of tables ..... 2000 mm

Planing Machine, model СФ 6

Maximum width of planing ..... 600 mm
Total length of tables ..... 2500 mm

Planing and Thicknessing Machine, model СР 3-3

Maximum width of planing ..... 300 mm
Maximum thickness of timber ..... 120 mm

Planing and Thicknessing Machine, model СР 6-2

Maximum width of planing ..... 600 mm
Maximum thickness of timber ..... 200 mm

Four-Sided Planing Machine, model СП 30

Maximum width of material admitted 300 mm
Maximum thickness of material .... 120 mm

Four-Sided Planing Machine, model СП 30-1

Maximum width of material admitted 300 mm
Maximum thickness of material .... 125 mm

Four-Sided Planing Machine, model СК 15

Maximum width of material admitted 150 mm
Maximum thickness of material .... 75 mm

Single-Spindle Shaper, model Ф 3

Diameter of cutter hole ..... 30 mm
Spindle speeds ..... 5500; 8000 r. p. m.
Working surface of table .... 1000 × 800 mm

Single-Spindle Shaper with Tenoning Table, model ФШ 3

Diameter of cutter hole ..... 30 mm
Spindle speeds ..... 3500; 5500; 8000 r. p. m.
Working surface of table .... 1000 × 800 mm

Universal Pattern Miller, model ФМ

Center of cutter spindle to face of body frame ..... 1250 mm
Working surface of table ..... 900 × 810 mm

Single-End Tenoner, model Ш 0-6

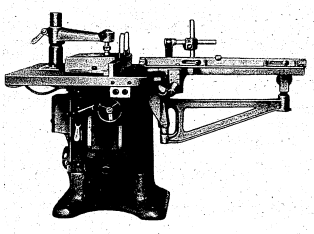
Maximum length of tenon ..... 200 mm
Maximum shoulder height of tenon.. 50 mm

Double-End Tenoner, model ШД 12

Maximum lingth of tenon ..... 200 mm
Maximum shoulder height of tenon .. 50 mm

Vertical Boring and Slot Mortising Machine, model СВШ

Maximum bore diameter..... 50 mm
Maximum depth of bore ..... 120 mm
Maximum length of slot (at one setting) ..... 200 mm



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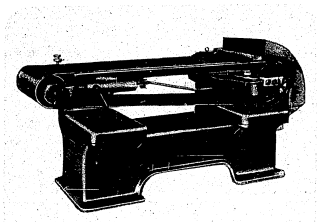


Horizontal Boring and Slot Mortising Machine with Automatic Feed, model СВПА

Maximum bore diameter ..... 30 mm
Maximum depth of bore ..... 100 mm
Maximum length of slot (at one setting) ..... 120 mm

Belt Sander, model ШЛНС

Width of sanding belt ..... 350 mm
Working length of sanding belt ..... 1270 mm

Belt Sander, model ШЛНС

Width of sanding belt ..... 150 mm
Working surface of table .....2000 × 800 mm

Swing Type Belt Sander, model ШЛСЛ

Width of sanding belt ..... 100 mm
Distance between center line of pulleys ..... 1470—1520 mm

Combined Disc and Bobbin Sandpapering Machine, model ШЛДБ

Sanding disc diameter ..... 800 mm
Sanding bobbin diameter ..... 90 mm
Sanding bobbin length ..... 210 mm

Chain Feed Three-Drum Sander, model ШЛЗЦ

Maximum width of sanding ..... 1250 mm
Maximum thickness of sanding .... 130 mm

Parquetry Moulder, model ПАРК 1

Minimum and maximum width of material ..... 40—130 mm
Minimum and maximum thickness of material ..... 10—40 mm

Parquetry Cross-Cut and Tenoning Machine, model ПАРК 2

Maximum thickness of material .... 45 mm
Maximum width of material ..... 120 mm
Maximum length of material ..... 1000 mm

Automatic Knife Grinder, model ТЧН 100

Maximum grinding length ..... 100 mm
Feed of saddle ..... 7.2 m/min.

Lever Saw Shears-Punches, model ПШ 3

Maximum saw thickness ..... 4 mm
Length of knives ..... 82 mm

MECHANICAL CRANK PRESSES

Single-Crank Inclinable Press, model К 231

Pressure near bottom of stroke ..... 10 t

Single-Crank Inclinable Press, model К 232

Pressure near bottom of stroke ..... 16 t

Single-Crank Inclinable Press with Automatic Roll Feed, model К 232 ВП 1

Pressure near bottom of stroke ..... 16 t

Single-Crank Inclinable Press with Automatic Ratchet Dial Feed, model К 242

Pressure near bottom of stroke ..... 16 t

Single-Crank Inclinable Press, model К 234 А

Pressure near bottom of stroke ..... 40 t

Gap-Frame Single-Crank Press, model К 115

Pressure near bottom of stroke ..... 50 t

Single-Crank Press, model К 035

Pressure near bottom of stroke ..... 63 t

Gap-Frame Single-Crank Press, model К 116 Б

Pressure near bottom of stroke ..... 70 t

Gap-Frame Single-Crank Press, model К 117 А

Pressure near bottom of stroke ..... 100 t

Straight-Side Single-Crank Enclosed Press, model К 262 Б

Pressure near bottom of stroke ..... 160 t

Straight-Side Single-Crank Enclosed Press, model К 273

Pressure near bottom of stroke ..... 200 t

Straight-Side Single-Crank Enclosed Press, model К 265

Pressure near bottom of stroke ..... 315 t

Mechanical Forging Press, model МКП 1500

Pressure near bottom of stroke ..... 1500 t

Mechanical Forging Press, model МКП 2500

Pressure near bottom of stroke ..... 2500 t

Double-Crank Single Action Enclosed Press, model К 372 А

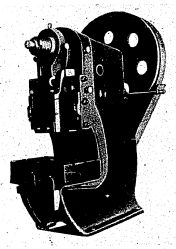
Pressure near bottom of stroke ..... 160 t

Double-Crank Single Action Enclosed Press, model К 374 А

Pressure near bottom of stroke ..... 250 t

Single-Crank Double Action Enclosed Press, model К 460

Pressure near bottom of stroke of plunger slide ..... 63 t
Pressure near bottom of stroke of blankholder slide ..... 50 t



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Single-Crank Single Action Inclinable Press, model KA 235

Pressure near bottom of stroke ..... 63 t

Single-Crank Adjustable and Pivoting Table Press, model K 126

Pressure near bottom of stroke ..... 70 t

COINING PRESSES

Knuckle-Joint Coining Press, model K 845

Pressure near bottom of stroke ..... 400 t

Knuckle-Joint Coining Press, model K 846

Pressure near bottom of stroke ..... 800 t

Coining Press, model K 847

Pressure near bottom of stroke ..... 1000 t

PERCUSSION POWER PRESSES

Percussion Power Press, model Ф 124

Capacity ..... 160 t

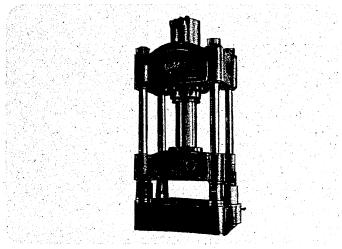
Percussion Power Press, model Ф 127

Capacity ..... 250 t

MISCELLANEOUS PRESSES AND MACHINES

Power Punching Press, model K 196

Capacity ..... 80 t



Wire Straightening and Cutting-Off Machine, model И 030

Minimum and maximum diameter of wire ..... 0.25—1 mm

Minimum and maximum length of wire that can be cut-off ..... 3—100 mm

Wire Straightening and Cutting-Off Machine, model И 032 A

Minimum and maximum diameter of wire ..... 2—6 mm

Maximum length of wire that can be cut-off ..... 450 mm

Wire Straightening and Cutting-Off Machine, model П 03

Minimum and maximum diameter of wire ..... 1—3 mm

Maximum length of wire that can be cut-off ..... 2000 mm

Wire Straightening and Cutting-Off Machine, model П 06

Minimum and maximum diameter of wire ..... 2—6 mm

Maximum length of wire that can be cut-off ..... 2000 mm

Straightening Single-Crank Press, model K 107

Capacity ..... 12.5 t

Straightening Single-Crank Press, model K 104

Capacity ..... 100 t

Straightening Single-Crank Press, model КБ 105

Capacity ..... 200 t

Straightening Single-Crank Press, model K 106

Capacity ..... 350 t

Pipe-Bending Press, model TT 25-60

Maximum pipe diameter ..... 60 mm
Maximum bending angle ..... 180°

Pipe-Bending Press, model И 010

Maximum pipe diameter ..... 75 mm
Maximum bending angle ..... 180°

Pipe-Bending Press, model TT 38-108

Maximum pipe diameter ..... 108 mm
Maximum bending angle ..... 180°

Pipe End Sizing Press, model П 041

Maximum pipe diameter ..... 650 mm

HYDRAULIC PRESSES

General Purpose Hydraulic Press, model П 452

Capacity ..... 50 t

General Purpose Hydraulic Press, model П 454

Capacity ..... 100 t

General Purpose Hydraulic Press, model П 457

Capacity ..... 200 t

Straightening Hydraulic Press, model П 413

Capacity ..... 25 t

General Purpose Horizontal Type Hydraulic Press, model П 002

Capacity ..... 100 t

COLD AND HOT FORGING AUTOMATIC MACHINES

Double-Blow Solid-Die Cold Header, model 52 BA

Maximum shank diameter ..... 3 mm
Maximum length under head ..... 35 mm

Single-Blow Solid-Die Cold Header, model A 111

Maximum shank diameter ..... 6 mm
Minimum and maximum length under head ..... 10—50 mm

Double-Blow Solid-Die Cold Header, model A 121

Minimum and maximum shank diameter ..... 3—6 mm
Minimum and maximum length under head ..... 8—50 mm

Double-Blow Solid-Die Cold Header, model 82 BA

Minimum and maximum shank diameter ..... 5—8 mm
Minimum and maximum length under head ..... 10—50 mm

Double-Blow Open-Die Cold Header, model A 161

Maximum shank diameter ..... 6 mm
Minimum and maximum length under head ..... 16—72 mm

Double-Blow Open-Die Cold Header, model A 169

Maximum shank diameter ..... 8 mm

Double-Blow Open-Die Cold Header, model A 162

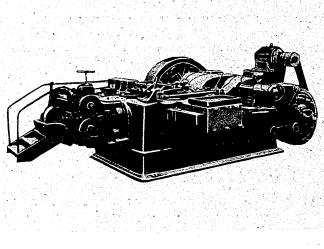
Maximum shank diameter ..... 10 mm

Double-Blow Open-Die Cold Header, model A 163

Maximum shank diameter ..... 12 mm

Double-Blow Open-Die Cold Header, model 122 BA

Minimum and maximum shank diameter ..... 8—12 mm
Minimum and maximum length under head ..... 40—150 mm



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Double-Blow Solid-Die Cold Header, model A 123

Maximum shank diameter ..... 12 mm
Minimum and maximum length under head ..... 15—90 mm

Double-Blow Solid-Die Cold Header, model A 124

Maximum shank diameter ..... 16 mm
Minimum and maximum length under head ..... 18—100 mm

Three-Blow Solid-Die Cold Header, model 53 BA

Maximum shank diameter ..... 5 mm
Maximum length under head ..... 20 mm

Three-Blow Solid-Die Cold Header, model 83 BA

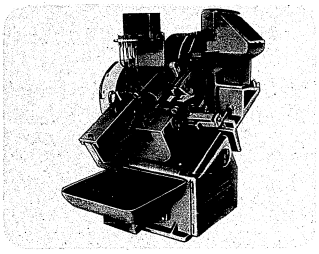
Minimum and maximum shank diameter ..... 5—8 mm
Minimum and maximum length under head ..... 10—50 mm

Bolt Head Trimming Automatic Machine, model A 231

Minimum and maximum diameter of shank ..... 8—10 mm
Minimum and maximum length of shank ..... 15—120 mm

Bolt Head Trimming Automatic Machine, model 12-OA

Minimum and maximum diameter of shank ..... 8—12 mm



Minimum and maximum length of shank ..... 25—100 mm

Bolt Head Trimming Automatic Machine with Hopper Feed, model A 233

Minimum and maximum diameter of shank ..... 12—16 mm
Minimum and maximum length of shank ..... 25—200 mm

Cold Ball Heading Machine, model A 142

Maximum diameter of ball ..... 8 mm

Cold and Hot Ball Heading Machine, model A 148

Maximum diameter of ball:
cold heading ..... 32 mm
hot heading ..... 51 mm

Cold and Hot Roller Heading Machine, model A 148 A

Maximum diameter of roller:
cold heading ..... 25 mm
hot heading ..... 38 mm

Wire Nail Machine, model A 713 A

Minimum and maximum diameter of wire ..... 1.8—3 mm
Minimum and maximum length of nail ..... 20—80 mm

Wire Nail Machine, model A 715

Minimum and maximum diameter of wire ..... 3—6 mm
Minimum and maximum length of nail ..... 40—200 mm

Automatic Thread Rolling Machine, model A 251

Minimum and maximum diameter of thread ..... 4—6 mm
Minimum and maximum length of thread ..... 6—60 mm

Automatic Thread Rolling Machine, model A 253

Minimum and maximum diameter of thread ..... 8—12 mm
Minimum and maximum length of thread ..... 20—100 mm

Automatic Thread Rolling Machine, model 12 HA

Minimum and maximum diameter of thread ..... 8—12 mm
Minimum and maximum length of thread ..... 20—100 mm

Automatic Thread Rolling Machine, model 5933

Minimum and maximum diameter of thread ..... 6—33 mm
Maximum length of thread ..... 40 mm

Automatic Universal Bending Machine, model A 910

Maximum diameter of wire ..... 0.8 mm
Maximum width of band ..... 5 mm

Automatic Universal Bending Machine, model A 912 A

Maximum diameter of wire ..... 2 mm
Maximum width of band ..... 18 mm

Automatic Universal Bending Machine, model A 913

Maximum diameter of wire ..... 3 mm
Maximum width of band ..... 25 mm

Automatic Splint Making Machine, model A 770

Minimum and maximum diameter of splint ..... 1—3 mm
Minimum and maximum length of splint ..... 6—40 mm

Automatic Splint Making Machine, model A 771

Minimum and maximum diameter of splint ..... 2.5—6 mm
Minimum and maximum length of splint ..... 20—100 mm

Automatic Nut Forming Machine, model A 412

Maximum diameter of nut hole .... 12 mm

Automatic Nut Forming Machine, model A 413

Maximum diameter of nut hole .... 16 mm

HAMMERS

Pneumatic Power Hammer, model IIM 50

Weight of ram ..... 50 kg

Pneumatic Power Hammer, model M 411

Weight of ram ..... 75 kg

Pneumatic Power Hammer, model МБ 412

Weight of ram ..... 150 kg

Pneumatic Power Hammer, model МПН 300

Weight of ram ..... 300 kg

Pneumatic Power Hammer, model M 415 A

Weight of ram ..... 400 kg

Pneumatic Power Hammer, model M 417

Weight of ram ..... 750 kg

Double-Frame Steam-Pneumatic Forging Hammer, model M 132 A

Weight of ram ..... 1000 kg

Double-Frame Steam-Pneumatic Forging Hammer, model M 133 A

Weight of ram ..... 2000 kg

Double-Frame Steam-Pneumatic Forging Hammer, model M 134

Weight of ram ..... 3000 kg

Steam-Pneumatic Stamping Hammer, model КП 1

Weight of ram ..... 3000 kg

Steam-Pneumatic Stamping Hammer

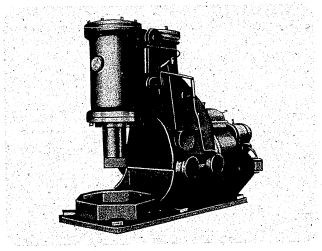
Weight of ram ..... 5000 kg

Spring Hammer, model M 611

Weight of ram ..... 30 kg

Spring Hammer, model M 612

Weight of ram ..... 60 kg



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FORGING MACHINES

Rotary Swaging Machine, model B 201

Maximum diameter of shank ..... 4.2 mm
Minimum forged diameter ..... 2.4 mm

Rotary Swaging Machine, model B 202

Maximum diameter of shank ..... 7.3 mm
Minimum forged diameter ..... 4.2 mm

Rotary Swaging Machine, model B 203

Maximum diameter of shank ..... 17.5 mm
Minimum forged diameter ..... 7.3 mm

Forging and Upsetting Machine, model ГКМ 800

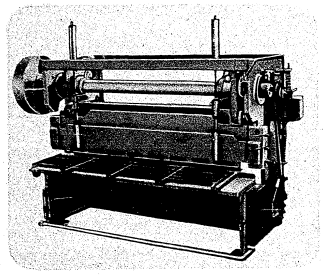
Capacity ..... 800 t
Maximum stock diameter ..... 100 mm

Forging and Upsetting Machine, model ГКМ 1200

Capacity ..... 1200 t
Maximum stock diameter ..... 150 mm

Forging and Upsetting Machine, model ГКМ 2000

Capacity ..... 2000 t
Maximum stock diameter ..... 190 mm



SHEARS

Alligator Shears, model H 313

Capacity:
bar diameter ..... 60 mm
beams and channels ..... No. 18

Combination Punch Shears, model H 970

Capacity:
thickness ..... 6 mm
bar diameter ..... 13 mm

Combination Punch Shears, model ПН 14

Capacity:
thickness ..... 14 mm
bar diameter ..... 36 mm

Combination Punch Shears, model HA 633

Capacity:
thickness ..... 16 mm
bar diameter ..... 55 mm
Beams and channels ..... No. 20

Combination Punch Shears, model H 514

Capacity:
thickness ..... 16 mm
bar diameter ..... 60 mm

Combination Punch Shears, model C 229

Capacity:
thickness ..... 13 mm
bar diameter ..... 40 mm
channels ..... No. 12

Combination Punch Shears, model ПН 1

Capacity:
thickness ..... 14 mm
bar diameter ..... 40 mm

Plate Shears, model ЛН 1

Capacity (thickness × length) .. 16 × 380 mm

Plate Shears, model НБ 421

Capacity (thickness × length) .. 1.5 × 1000 mm

Plate Shears, model H 461

Capacity (thickness × length) .. 3 × 1000 mm

Plate Shears, model ГН 349

Capacity (thickness × length) .. 3 × 1500 mm

Plate Shears, model HF 3

Capacity (thickness × length) .. 3 × 2000 mm

Plate Shears, model HA 462

Capacity (thickness × length) .. 6 × 1500 mm

Plate Shears, model H 463

Capacity (thickness × length) .. 9 × 2000 mm

Nibbing Machine, model H 533

Capacity ..... 4 mm
Throat depth ..... 1050 mm

Lever Shears, model PH 2

Capacity ..... 6 mm

Rotary Shears, model H 453

Capacity ..... 10 mm

Lever Combination Shears, model HA 913

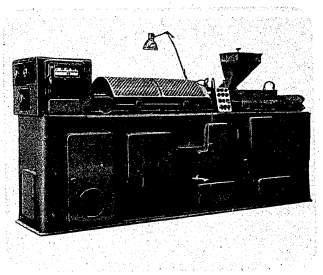
Capacity ..... 25 mm

Lever Combination Shears, model PH 1

Capacity ..... 30 mm

Bar Iron Shears, model H 212

Capacity ..... 32 mm



PLASTIC INJECTION MOLDING MACHINES

Plastic Injection Molding Machine, model ЛМ 50

Maximum weight of work molded per shot ..... 50 g

Plastic Injection Molding Machine, model ЛМ 250

Maximum weight of work molded per shot ..... 250 g

Plastic Injection Molding Machine, model ЛМ 500

Maximum weight of work molded per shot ..... 500 g

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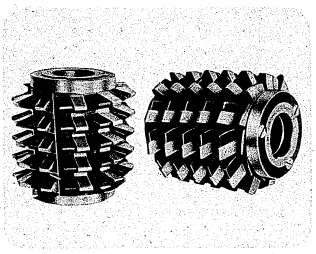
CUTTING TOOLS

Straight and Taper Shank Twist Drills
Carbide Tipped Twist Drills
Center Drills and Countersinks
Hand Taps for Metric, English and Pipe threads
Nut Taps with ground and cut thread for Metric and English threads
Machine Taps with ground and cut thread for Metric and English threads
Taper Thread Taps
Automobile Thread Taps
Adjustable Round Split Dies for Metric, English, Pipe, Taper and Automobile threads
Tangent Chasers for Threading Die Heads
Radial Chasers for Threading Die Heads
Circular Chasers for Threading Die Heads
Threading Die Heads
Coupling Boring Tools
Pipe and Coupling Threading Tools
Core Drills
Hand and Chucking Reamers
Reamers for Morse Taper



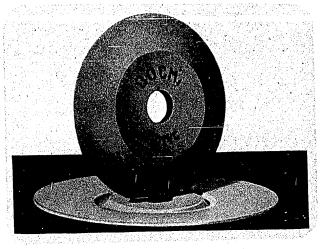
Multiple Thread Milling Cutters with ground thread
Taper Thread Milling Cutters for Drilling Tool Joints
Milling Cutters: Plain, Side, Slotting, Angle, End, etc.
Inserted Blade Milling Cutters
Disc and Shank type Fine Pitch Gear Shaper Cutters
Disc and Shank type Gear Shaper Cutters with straight teeth
Disc and Shank type Gear Shaper Cutters with helical teeth
Extended Recess Gear Shaper Cutters
Involute Gear Cutters
Fine Pitch Gear Hobs
Solid type Gear Hobs
Sectional type Gear Hobs
Tapered Gear Hobs
Spline Shaft Hobs
Rack-Shaped Cutters with straight and helical teeth
Straight Bevel Gear Tools
Spiral Bevel Gear Cutters
Fine Pitch Gear-Shaving Cutters
Standard Pitch Gear-Shaving Cutters
Files of various sizes and cuts

ABRASIVES

Grinding wheels:
- Straight Type
- Cylinder Type
- Tapered two sides
- Recessed one side
- Recessed two sides
- Perforated Disc Type
- Steelbacked Disc Type
- Disc Type
- Ring Type
- Straight Cup Type
- Flaring Cup Type
- Dish Type
- for Snap Gauges
- foor Needle Sharpening
- for Mineral Cutting-Off, etc.

The Grinding Wheels are made of super quality Corundum, Electrocorundum, Silicon Carbide, Boron carbide with Vitrified, Shellac, Rubber and Resinoid bonds of different grades, grains, structure and sizes

Abrasive Points of different shapes and sizes
Abrasive Bricks and sticks of different shapes and sizes
Abrasive Segments of different shapes and sizes
Abrasive Paper and Cloth
Waterproof Abrasive Cloth
Abrasive Grains and Powders



SINTERED CARBIDE AND HARD-ALLOY PRODUCTS

Sintered Carbides for machining different kinds of steel and cast-iron
Standard and Special Sintered Carbide Tips of any shape and size
Sintered Carbide Blanks of Drawing Dies
Hard Facing Alloys for Rock Drilling Tools

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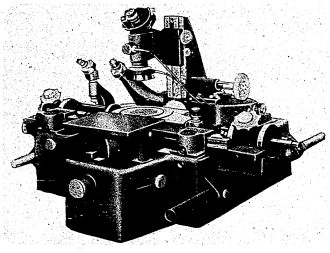
MEASURING INSTRUMENTS

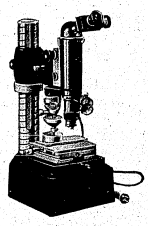
Micrometer Calipers
Screw Thread Micrometer Calipers
Micrometer Calipers for Measuring Sheet Metal
Indicating Micrometers
Micrometer Calipers for measuring Pipe Wall Thickness
Micrometer Calipers for measuring Soft Metal
Micrometer Depth Gauges
Inside Micrometer Calipers
Spur Gear Common Normal Length Measuring Instruments
Passmeters
Screw Pitch Gauges
Vernier Calipers
Vernier Height Gauges
Vernier Depth Gauges
Inside Micrometers
Thickness Gauges
Universal Bevel Protractors
Spherometers



Squares
Straight Edges
Sine-Bars
Frame Levels
Machinist's Levels
Surface Plates for Inspection and Marking
V-Blocks for Inspection and Marking
Thread Measuring Wires
Plug and Snap Gauges
Gear Tooth Vernier Calipers
Gauges for Measuring Convex and Concave Curves
Mechanical Comparators
Dial Indicators
Lever-Gear Indicators
Inside Dial Gauges
Dial Indicator Depth Gauges
Electric Contact Comparators
Gear Testers
Hob Testers
Optical Bevel Protractors
Gauge Blocks and Accessories
Ball Bearing Ring Checking Instruments
Optical Length Measuring Instruments
Toolmaker's Microscopes
Optical Comparators
Projection Comparators
Optical Dividing Heads
Interferometers
Micro-Interferometers
Profilometers
Air Operated Measuring Instruments
Linear Dividing Machines
Circular Dividing Machines

TESTING MACHINES

Portable and Stationary Type Hardness Testing Machines
Universal Hardness Testers
Wire Torsion Testing Machines
Torsion Testing Machines
Metal Overbend Testing Machines
Impact Testers
Fatigue Testing Machines
High Temperature Fatigue Testing Machines
Inertia Fatigue Testing Machines
Spring Fatigue Testing Machines
Abrasion Testing Machines
Universal Micro-Testing Machines
Tensile Testing Machines



Universal Hydraulic Tensile Testing Machines
Tensometers
Dynamometers
Attachments for Rolling Deformation Measuring Nets

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PORTABLE ELECTRIC TOOLS

Electric Metal-Working Drills

Electric Metal-Working Shears

Flexible Shaft Electric Grinders

Electric Wood-Working Drills

Electric Circular Saws

Electric Chain Mortisers

Electric Screw and Nut Drivers

Electric Hammers

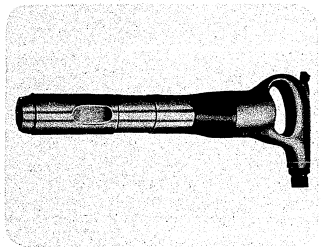
Electric Planers

High Frequency Electric Tools:

Drills, Shears, Grinders, Hammers,

Screw and Nut Drivers, etc.

Frequency Changers.



PORTABLE PNEUMATIC TOOLS

Pneumatic Drills

Pneumatic Riveting Hammers

Pneumatic Chipping Hammers

Pneumatic Grinders

Pneumatic Rivet Holders

MECHANIC'S TOOLS

Spring and Wing Dividers

Machinist Type Screw Drivers

Round and Flat Nose Pliers, End Cutting Nippers

Hand Metal Snips

Adjustable Wrenches

Pipe Wrenches

Die Stocks

Hand Vises

Chucks

Hack Saws

Tool Sets for Repairing Automotive Engines

Single-Row Radial Ball Bearings:
- Standard Types
- With Protection Washers
- With Ball Filling Slot
- With Locking Slot on Outer Race
- With Full Complement of Balls
- With Felt Seal
- With Shaft Replacing Inner Race
- With Flanged Outer Race

Self-Aligning Ball Bearings:
- Standard Type
- With Protection Washers

Cylindrical Roller Bearings with Short Rollers:
- Standard Type
- With Shouldered Inner Race
- With Thrust Washer on Inner Race
- With Locking Washers
- With Locking Hole on Outer Race
- With Shouldered both Inner and Outer Races
- With Roller Filling Slot
- Without Roller Cage
- Without Inner Race
- Without Outer Race
- Without Inner and Outer Races

Two-Row Self-Aligning Roller Bearings

Cylindrical Roller Bearings with Long Rollers:
- With Shoulders on Inner Race
- Two-Row Type
- Without Races

Needle Bearings:
- With Side Washers
- With Stamped Outer Race
- Without Inner Race
- Two-Row Type
- With Shouldered Outer Race

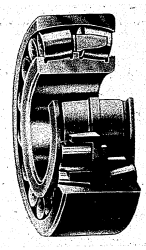
Spiral Roller Bearings:
- Standard Type
- With Shoulders on Inner Race
- With Long Inner Race
- With and Without Outer Race
- With Roller Assembly only
- With Split Outer Race

Angular Contact Ball Bearings:
- Standard Type
- Magneto Type
- Two-Row Type
- Two-Row Type with Two Inner Races
- Stamped Type
- With One Race Only
- With Ball Assembly Only
- Dish Type

Taper Roller Bearings:
- Standard Type
- With Flanged Outer Race
- With Steep Taper
- Two-Row Non-Adjustable Type
- Two-Row Adjustable Type
- Without Inner Race
- Four-Row Type

Ball Thrust Bearings:
- Standard Type
- Single Direction Type with Spherical Housing Washer
- Double Direction Type with Spherical Housing Washers
- Angular Contact Type

Roller Thrust Bearings:
- With Short Cylindrical Rollers
- With Tapered Rollers



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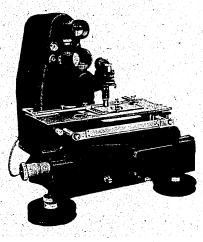
MICROSCOPES

Biological Microscopes
Trichina Microscopes
Textile Microscopes
Travelling Microscopes
Binocular Biological Microscopes
Stereoscopic Microscopes
Microscope Accessories:
- Binocular Bodies
- Photomicrographic Cameras
- Micrometer Eyepieces
- Drawing Apparatus
- Mechanical Stages
- Dark Field Illuminators
- Dark Field Condensers
- Microscope Lamps
- Phase Contrast Accessories

Polarizing Microscopes
Metallographic Microscopes



Electron Microscopes
Criminal Microscopes
Objectives, Eyepieces

PHYSICAL OPTICAL INSTRUMENTS

Quartz Spectrographs
Glass Spectrographs
Quartz-Glass Spectrographs
Universal Monochromators
Steeloscopes
Spectrum-Projectors
Microphotometers
Polarimeters
Polariscopes
Photometers
Photoelectric Colorimeters
Colorimeters
Spectrophotometers
Refractometers
Saccharimeters

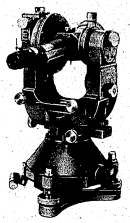
MEDICAL OPTICAL INSTRUMENTS

Lens measuring Instruments
Projection Perimeters
Slit Illumination Lamps
Ophthalmoscopes
Diaphanoscopes
Adaptometers
Eye Refractometers

Medical Set of Testing Lenses
Capillary Microscopes
Hemometers
Reflector Illuminators

GEODETIC INSTRUMENTS

Precision Theodolites
Triangulation Theodolites
Tacheometer-Theodolites
Pilot-Balloon Theodolites
Mining Theodolites
Precision Geodetic Levels
Mining Levels



Dumpy Levels
Engineer's Levels
Levelling Staves
Alidadas with Plane Table

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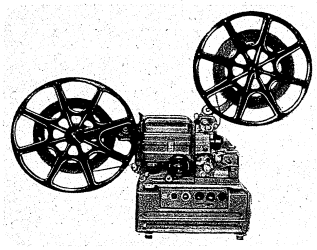
MOTION PICTURE EQUIPMENT

Cameras for Synchronous Operation
Cameras for Newsreel and Expedition Filming
Stationary Sound Film Recording Equipment
Portable Sound Film Recording Equipment
Sound Re-Recording Machines
Microphones
Developing Machines
Film Printing Machines
Matte Film Machines
Film Staplers
Film Sample Printers
Film Perforation Machines
Film Renovation Machines
Film Polishing Machines
Film Cutting Machines
Sound Editors

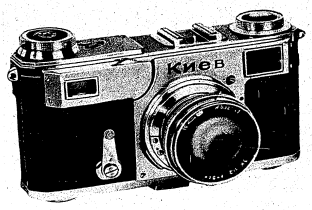


Synchronizers
Semi-Automatic Film Splicing Machines
Film Rewinders
Film Inspection Tables
Mechanical Caption Inscribing Machines
Stationary Sound-on-Film Projectors
Portable Sound-on-Film Projectors
Amplifiers
Rectifiers
Switching Racks
Motor-operated Dimmers
Fire Shutters
Reactive Arc Transformers
Autotransformers
Screens
Filmostats (Film Storage)
Screen Curtain Winches
Mobile Power Plants
Photoelectric Densimeters
Exposure Meters
Luxmeters
Perforation Inspection Instruments
Inspection Kits
Sound Track Measuring Instruments
Film Length Counters
Perforation Inspection Magnifiers
Voltage Stabilizers
Lighting Apparatus
Arc Lamps
Projector Lamps

PHOTOGRAMMETRIC INSTRUMENTS

Phototransformers
Stereometers
Mirror type Stereoscopes

PHOTOGRAPHIC AND OTHER INSTRUMENTS



Sensitometers
Densitometers
Developing Instruments
"Lubitel" Photographic Cameras
"Moskva-2" Photographic Cameras
"Zorki" Photographic Cameras
"Zorki-3" Photographic Cameras
"Kiev-2" Photographic Cameras
"Kiev-3" Photographic Cameras
Photographic Cameras with Stands
Photolenses
Binoculars
Magnifiers
Glass Lenses
Crude Optical Glass Blocks and Blanks

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Vneshtorgizdat. Order No. 1487

VSESOJUZNOJE EXPORTNO-IMPORTNOJE OBJEDINENIJE

StankoImport

Exports and imports:

Machine Tools
Metal-Working Machinery
Wood-Working Machinery
Rolling Mills (imports)
Measuring Instruments and Apparatus
Testing Machines and Instruments
Optical Instruments and Equipment
Portable Electric and Pneumatic Tools
Metal and Wood Cutting Tools
Mechanic's Tools
Chucks
Sintered Carbide and Hard-Alloy Products
Abrasives
Ball and Roller Bearings
Microscopes and Accessories
Motion Picture Equipment and Accessories
Geodetic Instruments and Equipment
Photocameras, Binoculars, Magnifiers, Lenses, etc.

Design and specifications of the equipment given herein are subject to change without notice.

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U S S R
MOSCOW

SELECTED SPECIFICATIONS

STAT

V/O "SOJUZNEFTEEXPORT"

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Aviation Gasolines Marks „Б-100/130", „Б-95/130" and „Б-91/115"

Fuel for aircraft piston engines.

Property	Б-100/130	Б-93/130	Б-91/115
Knock value:			
Octane number, min.			
research method	100	—	—
motor method	98.6	95	91
Performance number (3-C method, rich rating) min.	130	130	115
Distillation, °C:			
I. B. P. min.	40	40	40
97% max	180	180	180
Reid vapour pressure, mm Hg.:			
min.	240	220	220
max.	360	360	360
Pour point, °C max.	—60	—60	—60
Gum, mg/100 ml max.	2	2	2
Sulphur, % max.	0.05	0.05	0.05
Tetraethyllead, ml/kg max.	2.7	3.3	2.5
Colour	According to the colour of the ethyl fluid		

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Automobile Gasolines Marks „A-90", „A-88", „A-83", „A-74", „A-72" and „A-70"

Fuels for automobile carburettor engines.

Property	A-90	A-88	A-83	A-74	A-72	A-70
Specific graviry d_4^{20}, max.	0.745	0.745	0.745	0.740	0.734	0.734
Tetraethyllead, ml/ kg max	0.8	0.7	0.6	0.5	Absent	
Octane number, min.:						
research method	90	88	83	—	—	—
motor method	—	—	—	74	72	70
Distillation, °C max.:						
10%	70	70	70	79	70	70
50%	120	120	120	130	100	100
E. P.	205	205	205	205	170	180
Vapour pressure, mm Hg. max.	500	500	500	500	450	360
Gum, mg/100 ml max.	2	2	2	2	2	2
Induction period, minutes min.	500	500	500	500	500	500
Sulphur, % max.	0.1	0.1	0.1	0.1	0.03	0.05

Motor Benzene

Mixture of crude oil pyrolysis products (treated) and coal tar naphtha. Used as aviation and motor fuels component.

Colour	Clear
Specific gravity $d_{15.6}^{15.6}$	0.870—0.886
Distillation, °C min.	
60%	100
95%	155
Distillation bottoms fluidity:	
t = 0° C	Fluid over 30 min
Gum, mg/100 ml, max.	5
Sulphur, wt. %, max.	0.15
Cloud point, °C max.	—5

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Solvent Petrol „Galosha"

Used in the rubber industry.

Specific gravity d_4^{20} max.	0.730
Distillation, °C min.:	
I. B. P.	80
93%	110
98%	120
Aromatics, % max.	3.0
Oil spot test	Pass.

Solvent Spirit

A narrow low boiling straight-run fraction; for extraction of oils and fats in closed apparatus.

Specific gravity d_4^{20}, max.	0.725
Distillation, °C min.:	
I. B. P.	70
98%	95
Aromatics, % max.	4.0
Sulphur, % max.	0.05

Solvent Petrol (White Spirit)

Used as a solvent in the varnish-paint, drying oil and other industries.

Specific gravity d_4^{20} max.	0.795
Distillation, °C, max.:	
I. B. P.	165
98%	200
Flash point Martens-Pensky, °C min.	+33
Volatilization rate on xylene	from 3—4.5
Aromatics, % max.	16
Sulphur, % max.	0.025

Tractor Kerosene

Fuel for tractor carburettor engines.

Octane number, min.	50
Distillation, °C:	
10% min.	185
50% „	200
90% „	240
98% „	290
E. P. „	275
Sulphur, % max.	0.2
Colour, Stammer colorimeter (KN-51), marks max.	3.0

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Illuminating Kerosene Oil

Treated straight-run distillate, for lighting and domestic needs.

Specific gravity d_4^{15}, max.	0.820
Colour, by Stammer colorimeter (KN-51), marks max.	2.3
Flash point Martens-Pensky, °C min	40
Cloud point, °C not above	—15
Smoke point, mm min.	20
Sulphur, % max.	0.05
Distillation °C:	
18%	200
E. P. max.	290

Illuminating Kerosene (High Treated, Grade „VU")

High treated straight-run distillate, used for special lighting.

Specific gravity d_4^{20} max.	0.806
Colour, Stammer colorimeter (KN-51), marks min.	1.8
Flash point Martens-Pensky, °C min.	43
Smoke point, mm. min.	22
Distillation, °C	
I. B. P. min.	180
25% min	200
E. P. max.	290
Sulphur, % max.	0.1

Sweet Diesel Fuel. Grades „ДЛ" (Summer) and „ДЗ" (Winter)

Fuel for highspeed Diesel engines.

Property	Grades „ДЛ" (Summer)	Grades „ДЗ" (Winter)
Cetane number. min.	45	40
Diesel Index min.	48	40
Distillation, °C max.		
50%	290	275
90%	350	335
Kinematic viscosity at 20° C, cst	3.5–8.5	3.5—6
Sulphur, % max.	0.2	0.2
Flash point Martens-Pensky, °C min.	65	50
Pour point, °C max.	—10	—45

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Sour Diesel Fuel

Straight run distillate, used for high speed diesel engines.

There are two grades of sour diesel fuel: a) tractor fuel for summer (Л) used by ambient temperature minimum —5° C; b) tractor fuel for winter (З), used by ambient temperature minimum —30° C.

Property	Grades	
	Л	З
Distillation °C min.:		
50%	300	
85%	350	
Kinematic viscosity at 20° C, cst.	5.0	8.5
Conradson carbon, % max.	0.1	
Sulphur, % max.	1.0	
Hydrogen sulfide	Absent	
Flash point Martens-Pensky, °C	65	
Pour point, °C max.	—10	—35
Cetane number min.	43	

Motor Fuel

Fuel for low speed diesel engines.

Property	Grades	
	ДТ-1(M_3)	ДТ-2 (M_4)
Kinematic viscosity at 50° C, cst max.	36.0	55.3
Distillation, °C:		
15% max.	250	250
Carbon residue, % max.	3.0	3.5
Ash, % max.	0.04	0.08
Sulphur, % max.	0.5	0.5
Flash point Martens-Pensky, °C min	65	65
Pour point, °C max.	—5	—5
Water content, % max.	1.0	1,0

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Heavy Residual Fuel Oil

Used as boiler fuel.

Property	Grades		
	10	0	5
Specific gravity d_4^{20} max.	0.980	0.980	0.965
Viscosity at 50° C, °E max.	20	40	12
Sulphur, % max.	2.5	2.5	2.5
Pour point, °C max.	+10	0	—5
Flash point open cup, °C min.	85	100	80

Aviation Oils

Grades „MC-20" selective treated residual oil from selected lube-oil crudes and „MK-22" residual oil from selected lube-oil crudes. For lubrication of aircraft engines.

Property	Grades	
	MC-20	MK-22
Kinematic viscosity at 100° C, cst min.	20	22
Ratio of kinematic viscosities $\nu_{50} : \nu_{100}$ max.	7.85	8.75
Carbon residue, % max.	0.3	0.7
Acidity, mg KOH/g oil max.	0.05	0.1
Flash point Martens-Pensky, °C min.	225	230
Pour point, °C max.	—18	—14
Water soluble acids and bases, water and impurities	Absent	

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Diesel Oil

High treated mineral lubricating oil for high speed diesel engines.

Kinematic viscosity at 100° C, cst	10.5—12.5
Flash point open cup, °C min.	200
Pour point, °C max.	—18
Carbon residue, % max.	0.4

Compression Oils „M" and „T"

Oils M used for low-pressure single-stage and moderate pressure multi-stage compressors. Oils T used for high-pressure multi-stage compressors.

Property	Grades	
	T	M
Kinematic viscosity at 100° C, cst	15—21	8.5—14
Acidity, mg KOH/g max.	0.15	0.15
Sligh oxidation test max.	20	20
Flash point open cup, °C max.	240	216

Industrial Oil (Spindle Oil „2") Grade „12"

For lubrication of the weft winders, rokers and self-acting mules spindles, and for grinding mills bearings (1500—50000 fr. p. m.) too.

Kinematic viscosity, cst.	10—14
Acidity, mg KOH/g max.	0.14
Ash, % max.	0.007
Pour point, °C min.	—30
Water soluble acids, bases and water	Absent

Spindle Oil „3"

For lubrication of machine-tools, textile machinery, moderate horsepower electromachinery. Used also as a hydraulic fluid for the hydraulic systems of machine-tools.

Kinematic viscosity at 50° C, cst.	17—23
Acidity, mg. KOH/g max.	0.14
Ash, % max.	0.007
Pour point, °C max.	—20
Water soluble acids, bases, water and metals	Absent

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Transformer Oil

For transformers, oil circuit breakers and other high tension electrical apparatus.

Kinematic viscosity, cst max.:	
a) at 20° C	30.0
b) at 50° C	9.6
Acidity, mg KOH/g max.	0.03
Ash, % max.	0.005
Stability:	
a) Sludge after oxidation, % max.	0.05
b) Acidity after oxidation, mg KOH/g max.	0.2
Flash point Martens-Pensky, °C min.	135
Pour point, °C max.	—45
Water soluble acids, bases and metals	Absent

Turbine Oil „22" (Turbine Oil „L")

For lubrication of bearings and auxiliary parts of steam and water turbines:

Kinematic viscosity at 50° C, cst.	20—23
Acidity, mg KOH/g max.	0.02
Stability:	
a) Sludge after oxidation, % max.	0.10
b) Acidity after oxidation, mg KOH/g max.	0.35
Deemulsification rate, minutes max.	8
Flash point open cup, °C min.	180
Pour point, °C max.	—15
Sodium test with acidification, marks max.	2
Transparency at 0° C	Tsansparent

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Oil for Rolling Mills „П-28" (Brightstock)

Residual high viscous oil acid and clay treated. For lubrication of the rolling mill equipment and air compressors with high compression ratio. Used also in the electric insulation industry.

Kinematic viscosity at 100° C, cst	26—30
Carbon residue, % max.	1.0
Acidity, mg KOH/g max.	0.1
Flash point open cup, °C min.	285
Pour point, °C max.	—10

Lubricating Oil for Instruments („МВП")

Used to lubricate instruments operating at low temperatures, also to fill oil-pneumatic dampers.

Kinematic viscosity at 50° C, cst	6.3—8.5
Acidity, mg KOH/g max.	0.14
Flash point Martens Pensky, °C min.	120
Pour point, °C max.	—60
Ash, % max.	0.005

Perfumery Oil

From distillates of low pour point crudes. Used in the perfumery industry to manufacture vaselines, creams, pomades, etc.

Kinematic viscosity at 50° C, cst min.	16—24
Acid value, mg KOH/g max.	0.05
Ash, % max.	0.01
Flash point open cup, °C min.	160
Transparency at + 5° C	Transparent
Colour with glass No. 2, mm min.	270
Odour and taste	Absent

Vaseline Medicinal

Uniform smeary odourless, white substance.

Melting point, °C	37—50
Viscosity at 60° C, min.	
a) Kinematic, cst	16
b) °E	2.5
Acidity, mg KOH/g max.	0.28

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Medicinal Oil

Used for ointments, also as a solvent for injection-preparations to be introduced into the human body—camphor, etc. also used in the perfumery.

Specific gravity d_4^{20}	0.875—0.890
Kinematic viscosity at 50° C, cst	28—36
Ash, % max.	0.01
Flash point Martens-Pensky, °C min.	185
Pour point, °C max.	—5
Colour (KN-51) with glass No. 2, mm min.	270
Fractions up to 360° C, % min.	0.2
Acidity and alkalinity test	pass
Organic impurities test	pass

Grease Universal, Medium Melting, „УС-2" (Solidol Fat)

Used in various friction assemblies (bearings, hubs, rings on trucks, cars, tractors, machines etc.) with direct forced feed.

Soap contents, % min.	11
Melting point, °C min.	75
Penetration at 25° C	230—290

High Melting and Water-resisting Universal Grease. (Grease „1-13").

This grease is a mineral oil thickened with sodium-calcium soaps. Used to lubricate moderate-high load axial ball and roller bearings namely: in tram-cars, elactric train and electromotor boxes, working at temperatures not over 110° C.

Dropping point, °C min.	120
Penetration:	
at 25° C	250—290
at —40° C min.	30
Corrosion test at 20° C	
Steel plates, for 72 hours Bronze plates, for 24 hours	pass
Water, % max.	0.75

Textile Grease

Penetration at 25° C	275—325
Dropping point, °C min.	100
Corrosion test steel and brass plates, for 72 hours	pass

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Grease „ZIATYM-201"

Dropping point, °C min.	170
Penetration:	
at 25° C	270—320
at—60° C min.	50
Stability at 100° C, for 50 hours	
Oil separation, % max.	4
Evaporation, % max.	13
Corrosion test	pass

Grease „KB"

A high melting low temperature grease, used to lubricate machinery working at low temperatures.

Penetration:	
at 25° C	275—325
at —10° C min.	130
at —50° C min.	45
Dropping point, °C min.	120
Impurities	Absent

Paraffin White „A"

Solid crystalline product, obtained through crystallisation out from paraffinic and high paraffinic crudes distillates. Used in various industries (food, confectionery, perfumery, etc.)

Odour	Absent
Melting point, °C min.	54
Oil content, % max.	0.6
Colour, mm min.	250

Medicinal Ozokerit

Dropping point, °C	50—60
Penetration at 25° C with 100 g load, for 5 seconds	60—100
Impurities, % max.	3
Water	Absent

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Ceresin, Mark „80"

Mixture of hard hydrocarbons, naphtenic range.

Dropping point, °C min.	80
Penetration at 25° C with 100 g load, max.	16
Colour by Stammer in 1 : 20 gasoline solution, with glass, marks max.	5.5
Ash, % min.	0.03
Acid value, mg KOH/g max.	0.28

Synthetic Ceresin

Hard hydrocarbons mixture obtained in the gasoline and oils synthesis. Used as a component of the impregnation compound for automobile ignition coils.

Dropping point, °C	100—105
Penetration at 25° C with 100 g load max.	16
Impurities, % max.	0.1
Acidity, mg. KOH/g max.	0.28
Ash, % max	0.03
Water soluble acids and bases, water	Absent.

Petroleum Coke from Cracking-residuum

Used in the electrode, aluminium and other industries.

Moisture, % max.	3.0
Ash, % max.	0.8
Sulphur, % max.	1.0
Volatile matter, % max.	7.0
True sp. gr. after calcination at 1300° C for 5 hours, min.	2.08
Attrition hardness, % max.	8.0
Fines (pieces less than 25 mm), % max.	4.0

Petroleum Bitumens

Used as a building material.

Penetration at 20° C	5—20
Ductility at 25° C, cm min.	1
Softening point, °C min.	90
Flash point, °C min.	230

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Crude Oil of USSR Eastern Regions

Specific gravity d_4^{20}	0.870
Distillation, °C:	
26%	200
60%	350
Freezing point, °C, does not solidify at	—20
Sulphur, %	2.0

Krasnodar Crude Oil

Specific gravity d_4^{20}	0.860
Paraffines, %	2
Gum, %	24
Freezing point, °C does not solidify at	—18
Sulphur, %	0.2
Flash point ,°C	15
Distillation, °C:	
I. B. P.	23
7%	100
18%	150
27%	200

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